

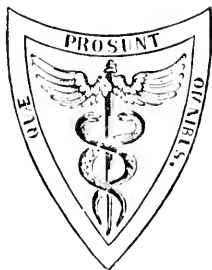
THE
AMERICAN JOURNAL
OF THE
MEDICAL SCIENCES.

EDITED BY
ISAAC HAYS, M.D.,
FELLOW OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA : MEMBER OF
THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA : AND OF THE AMERICAN
PHILOSOPHICAL SOCIETY : ASSOCIATE FELLOW OF THE AMERICAN
ACADEMY OF ARTS AND SCIENCES,
&c. &c. &c.

ASSISTED BY
I. MINIS HAYS, M.D.

NEW SERIES.

VOL. LXII.



PHILADELPHIA:
HENRY C. LEA.
1871.

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TO READERS AND CORRESPONDENTS.

All articles intended for the *Original Department* of this Journal must be contributed to it *exclusively*. The insertion elsewhere of *abstracts* of papers *prior* to the publication of the entire paper in this Journal is a violation of this rule. As original articles are *accepted only on this condition*, we consider those who favour us with contributions to be bound in honour to conform to it.

Contributors who wish their articles to appear in the next number, are requested to forward them before the 1st of August.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies will be furnished to authors, *provided the request for them be made at the time the communication is sent* to the Editors.

The following works have been received:—

Ueber den Einfluss des Höhenklimas auf verschiedene Erkrankungen mit Rücksicht auf die im Sanatorium zu Aussee in Steiermark gemachten Beobachtungen. Von Dr. J. SCHREIBER in Aussee. Wien: Wilhelm Braumüller, 1871.

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Notes and Recollections of an Ambulance Surgeon, being an Account of Work done under the Red Cross during the Campaign of 1870. By WILLIAM MACCORMAC, F.R.C.S., Assist. Surg. to St. Thomas' Hospital. London: J. & A. Churchill, 1871.

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Clinical Report of the Rotunda Lying-in Hospital, for the year ending 5th November, 1870. By GEORGE JOHNSTON, M.D. Edin. Dublin, 1871.

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On the Treatment of Psoriasis by Balsam of Copaiba. By HENRY SAMUEL PURDON, M.D., Phys. to the Gen. Hosp. and to the Hosp. for Diseases of the Skin. Belfast.

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 The Journal of Materia Medica. April, May, 1871.
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 The Boston Journal of Chemistry. April, June, 1871.
 Archives of Science and Transactions of the Orleans County Society of Natural Science. January, 1871.
 American Journal of Microscopy, April, May, 1871.

Communications intended for publication, and Books for Review, should be sent *free of expense*, directed to ISAAC HAYS, M. D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, London; or Mr. Hector Bossange, Lib. quai Voltaire, No. 11, Paris, will reach us safely and without delay.

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Études Anatomiques et Anatomopathologiques sur la Statique de l'Utérus. Par le Docteur F. A. Aran, Médecin de l'Hôpital Saint-Antoine, Professeur Agrégé à la Faculté de Médecine de Paris. Archiv. Gen. de Méd., 5ème Série, Vol. II., 1858, page 139 et page 310.	
Anatomical and Pathological Researches on the Statical Properties of the Uterus. By F. A. Aran, M.D., Physician to the Hospital "Saint Antoine," Assistant Professor in the Paris School of Medicine. Archiv. Gén. de Méd., 5th Series, Vol. II., 1858.	
De la Chute de l'Utérus. Par le Docteur E. Q. Le Gendre, Ancien Prosecteur de l'Ecole Anatomique des Hôpitaux; Lauréat de l'Institut, etc. etc., pp. 170. Paris: Baillière et Fils, 1860.	
On Prolapsus Uteri. By E. Q. Le Gendre, M.D., late Prosector in the Anatomical School of the Paris Hospitals, Laureate of the Institut, etc. etc., pp. 170. Paris: Baillière et fils, 1860.	159
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THE
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ART. I.—*On the Synclitism of the Equatorial Plane of the Fœtal Head in Pelvic Deliveries.* By HUGH L. HODGE, M.D., Emeritus Professor of Obstetrics and Diseases of Women and Children in the University of Pennsylvania.

THE number of this Journal for October, 1870, contains a paper from me on the synclitism of the cervico-bregmatic plane of the child's head, with the planes of the pelvis and vagina in cases of natural labour, the vertex presenting. The views maintained were in opposition to those of M. Nægèlè, Dr. J. Matthews Duncan, and a large number of distinguished writers, but more in accord with those lately put forth by M. Kueneke, of Berlin.

Under the firm persuasion of the truth of the views advanced, I pointed out very cursorily their practical importance in the management of all vertex presentations, especially wherein manual or instrumental assistance was required.

The great practical value of this parallelism of the cervico-bregmatic plane with the planes of the pelvis, will be apparent to any one who will carefully study the difficulties which more or less ensue when such synclitism is diminished or destroyed. Should flexion be imperfect, or so far disappear that extension exist, we would have in succession presentations of the anterior fontanelle, of the forehead, and eventually of the face; all of which would render labour more tedious or laborious, and dangerous for the child as well as the mother. Details are unnecessary, as labours so complicated are usually classed under the head of Dystocia, demanding manual or even instrumental assistance.

The great principle enunciated is equally applicable in cases of pelvic deliveries, when the head comes last and not first.

There is no novelty in this subject, but I am induced to recall the attention of the profession to it, as I think the fundamental principles respecting pelvic deliveries, founded on the natural mechanism of labour, have been practically ignored by some of the latest and best British obstetricians. It will be requisite, therefore, to give a brief summary of nature's mode of delivery when the coccygeal extremity of the fœtal ovoid is observed at the centre of the os uteri or the pelvic canal.

I shall take it for granted that both the mother and child are in good physical condition, that the labour has commenced at term, that the os uteri has been fully dilated, that the ovum is still unbroken, that there is the usual resistance of the tissues of the perineum as occurs in first labours, and also that it is the first position of a breech presentation.

Under these circumstances, every one acknowledges the semi-flexed condition of the child's head and body while still movable in the waters of the amnion; that the extremities of the child are gathered up towards the abdomen and chest, and the head slightly flexed. Under these circumstances, the membranes will soon rupture, and the liquor amnii pass off. The uterine contractions, and the bearing-down efforts, now rapidly increase in intensity, and are impressed directly upon the head and body of the child in every direction, from above downwards, laterally, and from the anterior to the posterior part of the uterus. The necessary mechanical result of this powerful pressure upon the child is greatly to augment its flexion. The whole body is bent forward, the arms as well as the lower limbs become pinioned to the front and sides of the body, while the head becomes more flexed, the chin impinging against the chest. The head here, as in other cases, acting as a lever of the first kind, resting upon the cervical spine as a fulcrum, its long arm extending to the chin is forced down, while the short arm extending to the occipital protuberance slightly rises. The child is rolled up so as to assume compact form, and an elliptical or ovoid shape, the upper extremity or vertex being at the fundus, and the coccygeal extremity at the centre of the os uteri.

All these changes are the mathematical result of the powerful pressure made upon the flexible body of the fœtus, and this fact is at the foundation of all knowledge respecting the mechanism of labour in breech presentations, and can alone furnish proper principles for the guide of the practitioner. We dwell the more upon this point, as the obstetricians of the present day speak with great lightness of "breaking up" this fœtal ellipse, resorting to artificial modes of delivery and to the employment of anæsthesia, undervaluing the essential importance of this flexion and the absolute necessity that the forcing pains of labour should be maintained for the continuance of this flexion and for the safe descent of the child.

The waters being evacuated, and the child thus compressed, the next

mechanical necessity is descent of the child through the os uteri into the pelvis. Let it be remembered that the child and the uterus may now be regarded almost as one body, and that the long axis of the ellipse from vertex to coccyx is coincident with that of the uterus, and that, owing to the pressure of the abdominal muscles and intestines, the fundus of the uterus is pushed forward against the linea alba, so that its axis approximates nearer and still nearer to the axis of the brim or superior strait of the pelvis. In this direction, therefore, the child descends, the circumference of the breech being parallel to that of the brim, and the long axis of the child's body parallel to the axis of the same opening.

It is unnecessary for our present purpose to enter into details as to the descent of the breech, or to enter upon the question started by Nægelè, which we deem of minor importance, whether one trochanter descends a little before the other. In another publication¹ I have endeavoured to maintain the parallelism of the breech with the planes of the obstetric canal, and have given details as to its descent, its rotation, and its final delivery at the vulva by unassisted efforts. These processes involve a lateral flexure of the body towards the pubis, a twist in the loins as one hip rotates towards the pubis, and, finally, the restitution of the hips to their original position, owing to the untwisting of the curve of the loins.

All this has been effected by the *vis à tergo*, which has been constantly increasing as the uterus has diminished in size. By the same power the arms will be found to be still pinioned to the sides of the chest, and, if no assistance be rendered, will readily descend through the pelvis and vagina, elbows coming first. The shoulders will follow, and, like the hips, descend obliquely, then rotate, and thus pass through the vulva. The lateral curve, to accommodate these changes in the position of the shoulders, will now be in the neck of the infant, which is also somewhat twisted, hence this twist and the lateral curvature in the neck of the child disappear when restitution of the shoulders has ensued.

As the delivery of the body has thus been accomplished, not in any degree by a *vis à fronte*, but, on the contrary, in opposition to the resistance arising from the tonicity of the os uteri, the curvature of the obstetric canal, and the rigidity of the perineal tissues, it is evident that the *vis à tergo* must have been very strong; and it is equally evident that the whole of this propulsive parturient force must have been expended upon the body of the child through the medium of its head and neck. It results, that the flexion of the head, which was augmented at the commencement of descent, must have been continually intensified, hence the chin is pressed as closely as possible to the breast of the infant, and descends with the chest into the cavity of the pelvis. We have therefore in all cases of

¹ Principles and Practice of Obstetrics. By Hugh L. Hodge, M. D. Philadelphia: Blanchard & Lea, 1864.

natural pelvic deliveries a "*presentation of the chin*." This is the all-important fact never to be disregarded in practical midwifery, without detriment to the child and its parent.

"A presentation of the chin" implies that it is found towards the centre of the pelvis, and hence the posterior fontanelle or vertex, the opposite "pole" of the head, is opposed to the fundus of the uterus. It results that the occipito-mental diameter is coincident with the axis of the uterus, and with that of the superior strait. In this direction, therefore, the head descends and becomes engaged in the brim; the base of the occiput will now be found opposed to the acetabulum, while the top of the head would be found at the opposite sacro-iliac symphysis, one parietal protuberance (the left) will be at the right acetabulum, and the other (right) will be at the left sacro-iliac symphysis, hence the cervico-bregmatic diameter corresponds to one oblique, and the bi-parietal to the other oblique diameter of the strait, and therefore the cervico-bregmatic plane of the head is now parallel to the plane of the superior strait.

The synclitism of the head in these cases of chin presentation is just as perfect as in those of the vertex. It cannot be otherwise, for it is manifest that as the occipito-mental diameter in both cases is coincident with that of the brim, the same equatorial plane of the head is involved. In both cases we have the most favourable, that is, the smallest, circumference of the head descending into the pelvis.

It is unnecessary here to enter into a criticism of M. Nægelè's opinion that the pubic parietal protuberance descends prior to the sacral protuberance, and therefore that there is no proper parallelism of the planes, inasmuch as we have shown the fallacy of this opinion on former occasions, and also the illegitimacy of the argument drawn from the fact that the pubic protuberance can be recognized early in delivery.

As the head in this manner passes through the brim, it in like manner descends through the successive planes of the pelvis, moving in the direction of the axis of the brim until the chin and face rest upon the perineum and the occiput is arrested behind the bones of the pubis. The flexion of the head is constantly preserved by the *vis à tergo*, which, for reasons already mentioned, is most influential on the anterior part of the head constituting the long arm of the lever. Thus far the cervico-bregmatic plane maintains its synclitism with each successive plane of the pelvis as low down as the third sacral bone, and the subpubic ligament. The head, indeed, has passed through the superior strait, and is technically *in* the pelvis, between the two straits.

One or two facts should now be remembered: first, the head being out of the uterus, the contractions of this organ are no longer available for its descent, the expulsive force now is dependent simply on the abdominal muscles and diaphragm. This observation is all-important, and yet it is very frequently neglected, the practitioner, unfortunately, waiting for uterine

contractions, or for the expected influences of ergot or other oxytocic medicines, to the imminent danger of the child's life. A second fact of equal importance is, that the placental functions usually cease at the time of the extrusion of the head from the uterus; indeed, the placenta is often then detached, and the uterus reduced to its post-partum size. Much stress is laid by all teachers upon the great truth that the child's life is often destroyed in these pelvic deliveries by pressure upon the funis, but few comparatively indicate the greater danger arising from this early detachment of the placenta. Under these circumstances, therefore, that is, when the head is in the pelvis, the child cannot long survive. Dr. Barnes would limit the period to three, perhaps five minutes at the utmost, but this must, of course, vary exceedingly.

Usually, however, there is no delay. Every adequate provision has been made for rapid delivery. The presence of the child's head upon the floor of the pelvis excites an intense tenesmus in the mother, her voluntary bearing-down efforts are redoubled, and being directed upon the top of the head, rotation occurs readily as the occiput and forehead play upon the opposite inclined planes of the pelvis. The flexion of the head continues, not only in consequence of the resistance of the cervical vertebrae to the descent of the occiput, but also by the arrest of this portion of the cranium behind the symphysis pubis. The face, therefore, is forced down upon the perineum, the chin advancing on the posterior part of the vagina to the centre of the now distended perineum. It will then be found that while the cervical region of the occiput is closely approximated to the arch of the pubis, the top of the head, as represented by the anterior fontanelle, will be near the coccyx, and the parietal protuberances will be found at the tuber ischii.

We have, therefore, again, synclitism of the cervico-bregmatic plane with that of the inferior strait of the pelvis: the occipito-mental diameter is coincident with the axis of this outlet, and the cervico-bregmatic diameter corresponds to the coccy-pubic diameter and the bi-parietal to the bis-ischiatric diameter of the inferior strait.

The bearing-down efforts continuing, and the occiput being arrested at the pubis, the chin continues to traverse the central line of the obstetric canal, the forehead and top of the head sliding upon the posterior wall of the vagina. In a short time the chin will pass out through the centre of the dilated vulva, while the parietal protuberances will be detected towards each labium and the anterior fontanelle at the fourchette; the base of the cranium all this time being fixed at the apex of the pubic arch. We have, hence, at this juncture, the cervico-bregmatic diameter corresponding to the antero-posterior diameter of the vulva, the bi-parietal to the transverse and the occipito-mental to the axis of this opening. In other words, perfect synclitism of the cervico-bregmatic plane with the plane of the orifice of the vagina. This is the easiest possible mode in which the head can pass. Any departure from this synclitism enhances the difficulty of deliv-

ery, and, more or less, endangers the life of the child, inasmuch as, the placental functions having ceased, every moment of delay from malpresentation of the head, from officious or improper interference by the physician, is fraught with danger.

This is a simple account of the mechanism of labour in pelvic presentations, of which every practitioner is, or ought to be, well acquainted. It is in this way that thousands and tens of thousands of women have been delivered spontaneously or with little assistance from the scientific obstetrician. I therefore cheerfully join Baudelocque in arranging pelvic deliveries under the head of eutocia, or natural labours. Many, even of the most recent writers, still term them preternatural, conveying the idea not only of complication and danger, but of a necessity for manual or instrumental assistance. Very few declarations have been more mischievous. Nature is not intrusted: traction is constantly resorted to, either directly upon the hips, or indirectly through the limbs after they have been brought down. The integrity of the fœtal ellipse has thus been broken up, the breech has been prematurely dragged through an os uteri not sufficiently dilated for the passage of the head, or even of the shoulders; hence, delays from the rising up of the arms to the sides of the head, destruction of the flexion of the head, and of course malpresentation. The practitioner, overwhelmed with anxiety, redoubles his tractile efforts, calls for assistance, or, in the language of a recent writer, "adds the weight of his body to the power of his muscles upon the delicate tissues of the child's neck." No wonder, then, that "still-births" so often occur in these pelvic labours, and that we read, and perhaps hear still more frequently, of partial or complete lacerations of the tissues of the child, and even a rupture of the neck; the body being delivered and the head remaining in the pelvic passages. This statement is not, I believe, too strong. The evils arise not only from the impropriety of arranging these deliveries under the head of dystocia, but also from the improper directions given, even by the best authors, as to the proper mode of delivery when assistance is really demanded. Of this more will be said in the sequence.

From these truisms, respecting the natural mechanism of pelvic labours, several important conclusions may be derived.

First. The great value of maintaining not merely the uterine, but the bearing-down efforts of the mother during the whole process of descent, that the fœtal ellipse or ovoid should be completed and preserved even to the last period of delivery, so that the arms may be retained at the side of the chest, and the flexion of the head be preserved or even augmented until its final exit at the vulva.

This self-evident proposition has, however, been very much forgotten by modern practitioners. The humane anxiety of physicians to diminish the sufferings of the parent, coupled with the idea that artificial assistance will generally be requisite, has given rise to the injudicious resort to anæs-

thesia. However advantageous may be the moderate employment of ether or chloroform, to diminish inordinate mental and physical excitement, yet, when carried so far as to suspend, or even diminish, the *vis à tergo*, it is decidedly injurious. Normal labour is for the time suspended, and although the accoucheur, confident of the truth of his principles and expert from long experience, will complete the delivery artificially, his work will be accomplished *contra naturam*; the traction from below, the *vis à fronte*, is not comparable to the pressure from above the *vis à tergo naturalis*. The fœtal ellipse is broken up, its various portions are usually deranged, involving the necessity of many minor operations and of much delay, often giving rise to those injuries to the mother and child which have been already detailed. I have always maintained that in vertex as well as in pelvic deliveries, during the process of descent the mother should retain her consciousness, so far at least as to be under the complete direction of her accoucheur, that her voluntary efforts should be exerted or restrained according to the existing emergencies.

Another important corollary is, that if in some difficult cases of version anæsthesia be essential, yet after mutation be accomplished, the patient should be revived. Then she can renew her bearing-down efforts, the uterus will resume its original activity, and the practitioner will have the great advantage, if further assistance be required, of operating in accordance with natural laws.

The *second* conclusion is: The necessity of prolonging the first stage of labour, in other words, having the os uteri dilated as fully as can be. The liquor amnii should be preserved, thus preventing the premature descent of the breech.

The greater this enlargement of the os uteri, the greater will be, *cæteris paribus*, the facility of the transit of the shoulders and head. The liability, also, of breaking up the fœtal ovoid will be greatly diminished. The breech, also, should be preserved in its entirety, that is, with both thighs bent up in front of the pelvis; for the larger this body, the slower will it pass through the os uteri and the greater will be the dilatation of its orifice. Hence, if one leg, and especially if both, be brought down, the size of the breech will be diminished, the os uteri will be imperfectly dilated, the breech will descend prematurely into the pelvis, the fœtal ovoid will be broken up, the arms will rise to the side of the head, and a malpresentation of the cranium be induced.

All are acquainted with the means of prolonging the first stage of labour; especially by the recumbent position, the forbidding all bearing-down efforts, while the practitioner should be most careful in his examinations not to break the integrity of the ovum. Indeed, the liquor amnii should be preserved as long as possible. The child is safe until this fluid be evacuated.

This judicious and important rule has been greatly neglected, often to

the discomfort of the obstetrician and to the destruction of fœtal life. Especially has this been the case when recourse has been had to podalic version.

This operation, which has always been regarded as a grave one, has been much diminished by the introduction of the forceps. But of late years it has again risen in favour, under the patronage of high authority. The induction of premature labour, for the relief of many complicated cases, has given a new impetus to this mode of delivery. Great benefits have been conferred upon humanity by the practice of premature delivery, a practice for which we are all much indebted to British accoucheurs. This operation is now universally recommended and adopted. Still, however, it is not without its evils. It arrests the physiological development of the uterus, and also of the fœtus, whose premature birth is often fatal. The cervix uteri, being still undeveloped, is enlarged, at least partially, by mechanical dilators, which, although they will eventually excite uterine action, too often produce more or less local irritation. The operation is undertaken, also, while the cervix uteri, vagina, etc., still retain their tonicity; before there is any softening or relaxation of these tissues, which naturally precedes labour at term, generally accompanied with free secretions. It is often difficult, also, to preserve the integrity of the os, especially where podalic version is employed. Hence there usually is an imperfect dilatation of the os, so that although the legs and pelvis of the child may pass, yet there will be dangerous delay to the shoulders and head. These points should always be taken into consideration, and although they afford no argument against the induction of premature labour in cases of imperative necessity, yet, surely, they should prevent the frequent and apparently injudicious resort to this operation which, of late, has become so fashionable. Certainly, to some of us old practitioners it seems very strange that gestation should be arrested, and the life of the fœtus, still immature, be exposed to imminent danger, for accidents through which we have often carried our patients, with safety to the mother and child. It does not seem possible that experience will eventually sanction the induction of premature labour under all the various complications lately portrayed, under fourteen distinct heads, by Professor Thomas, of New York. The hope must exist that the medical department of obstetrics will be so improved that the employment of surgical measures will be far more limited than at the present day.

Be this as it may, certainly every effort should be made to secure, as much as possible, the relaxation of the tissues, and a great dilatation of the os uteri, before the descent of the fœtus is permitted.

In all ordinary cases, where moderate assistance is demanded, it may be safely rendered by traction upon the groin with the fingers, the fillet, or even the blunt hook, properly used. The breech being comparatively small and compressible, and the body flexible, readily, even when there is much

rigidity of the perineum, accommodate themselves to the curvatures of the pelvis and vagina. *Exceptio probat regulam.*

A third conclusion is the great importance of avoiding tractile efforts in all cases of uncomplicated pelvic delivery. Moreover, when traction is absolutely necessary, it should be made in such a manner that the integrity of the fœtal ovoid should be preserved as much as possible. The value of the first part of this proposition must be already evident from a review of the mechanism of labour just detailed. Time should be allowed, not merely for sufficient dilatation of the os uteri, but for the descent of the breech through the pelvis. All premature traction upon the groins or the limb renders delivery too rapid for the proper descent of the arms, which may, therefore, be retained on the sides of the head. Let it be remembered, also, that the fœtal life is comparatively safe until the breech be low down, as the umbilical cord is protected from pressure very much by the limbs of the child, and is not, indeed, subject to injury until it has passed through the circle of the os uteri.

As to the *mode of operating*, when interference is absolutely necessary, the necessity of the rule already laid down is abundantly evident. Unfortunately, the practice, of even distinguished accoucheurs, has not always been *secundum regulam*, and hence, as we have already mentioned, dire calamities have resulted to the fœtus, and also to the mother.

I have thus endeavoured to exhibit the natural mode of delivery in pelvic presentations, and how the synclitism of the equatorial plane of the head with the planes of the obstetric canal is induced and maintained during the whole process of descent. The value of this knowledge, as affording a foundation for scientific assistance, when this is demanded, must be apparent. Strange, however, it has been greatly ignored during the process of traction, not only when the head is at the superior strait, but when it is low down in the inferior strait or on the perineum, where the diameters are more contracted.

To justify this criticism, many citations might be made from practical writers, and also from individual experience. By way of illustration, I may be excused for some critical remarks on the modes of delivery, after version, in cases of contracted pelvis, practised by two great British obstetricians, the late Sir James Y. Simpson, of Edinburgh, and Dr. Robert Barnes, of London, whose late work on the operations of midwifery has elicited much well-merited commendation.

All obstetricians are fully acquainted with the views upon this subject, promulgated by that great and good man, Sir James Y. Simpson, for whose untimely death the medical profession has sincerely mourned. His very learned and most ingenious paper on the importance of podalic version, in moderately deformed pelves, has secured many admirers and many followers. The enunciation of his most fundamental point every obstetrician must receive with hearty approbation. No one, we think,

would controvert the proposition that version should be employed in preference to craniotomy in all cases where there is the least hope of preserving the infant, nor are we aware that such an abstract proposition was ever seriously denied. Indeed, this practice was almost universally employed prior to the beginning of the eighteenth century, and has never been entirely abandoned, although most practitioners have, for more than a century, given a preference to the long forceps. The conclusive facts and arguments, therefore, of Dr. Simpson, in favour of podalic version, in preference to craniotomy, which he has so adroitly presented, no one will contravene.

The true question, however, to be agitated is, whether podalic version is to be preferred to the long forceps. Much may be said in opposition, and the final determination of the profession may be, and we think will be, adverse to the recommendations of Dr. Simpson.

It is foreign to the present paper to enter into an examination of this important practical question, my object being to criticize the mode of delivery practised by Dr. Simpson in podalic cases, and the principle by which he is guided. One or two remarks, however, may not be irrelevant, and it is hoped will not be regarded as ungracious.

In making a comparison as to the relative value of forceps or version, many collateral circumstances must be considered, and there are cases, doubtless, whose peculiarities are such as to forbid the use of forceps. Much, also, depends on the special condition of the patient. Much, also, on the science and experience of the operator, and, especially, whether he has been in the habit of resorting most frequently to the use of his hand alone, or of the instrument. There can be no doubt, however, that a large portion of the success of the instrumental operation is dependent on the structure of the forceps employed.

British accoucheurs have almost universally trusted to the short, or even to the straight, forceps. These are worse than useless, if there be deformity of the brim. As regards their long, double curved forceps, I have seen two specimens of Prof. Simpson's, and one of Dr. Hewitt's, of London, which Dr. Barnes approves. Each of these instruments has short handles, and is therefore deficient in power. Their great defects, however, are, first, small size of the fenestræ, too narrow for the parietal protuberances to enter; hence, when applied, they encroach upon the space of the pelvic canal, and, second, when the handles are brought into contact, the blades remain separate 3 inches and 3 or 4 lines. It is no wonder, therefore, that we hear of failure of the forceps in cases where the conjugate diameter of the brim measures but 3 or $3\frac{1}{4}$ inches, especially if the other diameters are also contracted. Such forceps can have little or no effect as compressors, nor any power to accommodate themselves to the size of the head, when this is diminished or "moulded" by the pressure of the pelvic canal. Tractile power, therefore, must be diminished, and danger may

be apprehended to the tissues of the fœtus, and even of the mother. The forceps, indeed, are too wide either for the head of the child or the cavity of the pelvis. Writers and teachers in Great Britain have been so apprehensive that undue pressure will be made upon the head by the forceps, that they have endeavoured to prevent such pressure by the form of the instrument, being unwilling to trust to the science and judgment of the operator. The question, therefore, of the relative advantage of the forceps over podalic version, cannot even be discussed upon good grounds, unless a forceps be employed with handles of suitable length to insure a sufficient tractile and leverage power, and where the fenestræ are large enough to admit the parietal protuberances, and where the blades can be approximated so as to make a requisite degree of compression, and also that they may accommodate themselves to the size of the head, retaining their hold without slipping. With such an instrument, my own experience, and that of many others, shows that the head can be delivered from a contracted brim, when the conjugate diameter measures 3 inches, and with more safety to the child and mother than by podalic version.

Upon this subject of the comparative value of podalic version, and vertex deliveries by the forceps, Prof. Simpson has broached notions quite novel, and in opposition to received opinions. He labours hard, reasons ingeniously, and illustrates his views by diagrams, to show that when the head presents to a contracted brim, it actually flattens, and that, therefore, the transverse diameter of the head is really elongated instead of being diminished, or to use his own language (p. 460, vol. i. Am. ed.):—

“If we attempt to make the vertex of the head to pass first through an aperture less than its own diameter, then we are apt, the more we press, to increase rather than diminish the difficulty attendant upon its transit; for the more force we apply, we are liable to render that part which is already too broad, still broader, by flattening it against the sides of the aperture, and making its parietes at one point or another diverge and widen, instead of converge and contract.”

The Professor presents no proof of this flattening of the head, and, with due respect, it must be deemed hypothetical. Moreover, it seems contrary to correct mechanical laws, and also to experience. The vault of the cranium is very compressible, its sides come in contact with the bones of the pubis, and the lumbar vertebræ or the promontory of the sacrum; it seems, therefore, to be a necessary consequence, that as the head is driven down into a contracted aperture, the sides of the head must have a tendency to approximate. The transverse diameter will be somewhat diminished, while the parietal bones will overlap each other, and thus the vertical diameter will be increased. The superior surface of the cranium, therefore, will become more convex instead of flattened, for against it there is no pressure; it presents, not “against the sides of the aperture,” but upon an open space. If the top of the head were to be pressed against

the superior margin of the pubis, the supposition that the sinciput would be flattened, and the bi-parietal diameter lengthened, would be plausible; but as, in ordinary cases, there is no pressure upon the top of the head, all pressure being lateral, it may safely be presumed that the top of the head, instead of being more flattened, would be rendered rather more convex.

Prof. Simpson seems to be also incorrect when he insists that the parietal protuberances descend first in vertex presentations, that thus the broadest part of the cone of the head engages first. If, however, the head be flexed, as it almost universally is, the occipital protuberance precedes the broader portion of the head, and gives us here the advantage of a wedge equal in importance to that to which Dr. Simpson is so partial, extending on the sides of the head, from the mastoid processes to the parietal protuberances.

This posterior wedge, extending from the occipital projection to the parietal protuberances, is naturally very obtuse, but it is compressible and extensible, and has, it would appear, in this respect, an advantage over the lateral wedge, one-half of which, from the base of the cranium to the temporo-parietal suture, is absolutely incompressible.

These mechanical views seem to be confirmed by experience, for it is a common observation of the profession that, in all cases of mechanical difficulty, the head after birth has its occipito-mental diameter greatly prolonged, its bi-parietal diminished, its cervico-bregmatic lengthened, with an overlapping of the parietal bones, and a consequent increase in the convexity of the top of the head.

To return, however, from this digression, although it involves fundamental principles, to the importance of maintaining the synclitism of the equatorial circumference of the head in pelvic deliveries.

Prof. Simpson, while insisting upon the great advantage of podalic version in contracted pelvis, so that powerful traction may be made through the medium of the neck, asserts that in this way the bi-mastoid diameter of the head enters first through the brim, and as the head is dragged down, compression is regularly made upon the sides of the head until it reaches the greatest breadth at the parietal protuberances. He therefore earnestly contends that, in such cases, the head should be regarded as a wedge, the truncated apex of which is on the line of the mastoid processes, and the base on a line with the parietal protuberances; and dwells much upon the importance of this wedge, in rendering pelvic deliveries more favourable than presentations of the vertex, where the broad part of the head, according to him, enters first, which, he maintains, becomes still broader by pressure. The incorrectness of this view, as regards the flattening of the top of the head, and as to the declaration that it first enters the strait, has been already shown. Respecting the wedge-like form of the sides of the cranium there can be no doubt, and, under particular circumstances, advantage may be taken of it by the practitioner;

but to fix attention upon this as of fundamental importance, and to deduce from it a great practical rule in pelvic deliveries, never to be lost sight of, is, in our opinion, indefensible: for—

First. This lateral wedge is shorter, and a large portion of it is incompressible, and therefore, as a wedge, has no advantage over the posterior extremity of the head, extending from the occipital protuberance to the parietal processes.

Second. In natural pelvic deliveries, this lateral wedge is very little, if at all, involved. It is the chin which enters first, the pressure upon the sides of the head is then very gradually made from this point to the parietal protuberances. In other words, in all such deliveries the head must be regarded as a cone, with its base at the cervico-bregmatic circumference, and its apex at the mentum or chin. Hence the chin descending first, we have the bi-malar, the bi-temporal, and then the bi-parietal, regularly succeeding each other in their position, and also in their length. The bi-mastoid diameter cannot be considered as involved, as the broad part of the head between the parietal bones descends simultaneously with the mastoid processes, and the pressure, therefore, is directed immediately upon the sides of the head. This is Nature's method, and certainly it should not only, *a priori*, be regarded as the best mode, but is in perfect unison with the experience of the best practitioners. It seems to us, therefore, very wonderful that this essential fact should have been so completely ignored by Prof. Simpson. He insists that the bi-mastoid diameter, and not the bi-malar, descends first, and that the short obtuse wedge from the mastoid processes to the parietal protuberance, and not the comparatively long and tapering wedge, from the chin to the broadest part of the head, is involved in these pelvic deliveries. He neglects entirely the synclitism of the equatorial plane of the head with the planes of the pelvis instituted by nature, and which art should follow.

Doubtless, Dr. Simpson often succeeded in thus delivering his patients, and not unfrequently preserving the life of the child. These deliveries, however, were accomplished by depending far too much on mere physical, muscular force, and not sufficiently on scientific principles. The true rule is, "*arte non vi.*" The proper method of delivery in these cases would be to insure flexion of the head prior to traction, and to maintain by every practicable means such flexion until the head passes through the obstetric canal, and is delivered at the vulva. The reasons are very apparent. We gain the advantage of a long, tapering wedge from the chin to the parietal protuberances, instead of the short, obtuse lateral wedge from the mastoid processes to the top of the head; but the great advantage is that if flexion be maintained, the occipito-bregmatic plane is synclitic with the plane of the os uteri and of the brim. If, on the contrary, powerful traction effort be made upon the spine, the posterior part of the head descends prematurely, so that the chin departs from the breast, partial extension is

effected, and hence the occipital protuberance will be found upon one side, and the forehead upon the opposite side of the pelvis, and it results that the occipito-frontal plane becomes parallel to that of the os uteri and brim. In this case, therefore, we have the long diameter of the cranium, measuring at least four inches, concerned, instead of a short diameter measuring three and a half inches. The mechanical difficulty thus induced is evident, and there are few practitioners who have not experienced the embarrassment which has resulted from this accident even in cases where the labour was in other respects perfectly normal; an embarrassment which alone has been the cause of fatal result. If, therefore, the cervix uteri be in any degree rigid, or if there be any diminution in the oblique diameters of the pelvis (which may often be anticipated when the conjugate diameter is much diminished), the obstruction to a speedy delivery is greatly enhanced. Great muscular effort on the part of the practitioner becomes an imperious necessity when traction is thus unscientifically made, endangering the tissues of the neck and head of the child, and also the tissues of the parent, and very generally, we must think, with fatal results to the child.

Prof. Simpson has manifested great acumen and much research to prove the great amount of traction effort which the neck of the child will tolerate, provided the fœtus is still alive or only recently dead; and also how much compression of the head is sometimes compatible with the life of the infant even when contusions of the scalp, deep indentures of the cranium, sometimes with fracture of the bones, have ensued. For all of which the profession should be very grateful. Experienced practitioners, however, will not be ready to receive them as general facts on which practical rules are to be founded, but must regard them as exceptions indicative of the wonderful tenacity of life, and the recuperative powers of the new-born. Such facts also may encourage them not to despair, even when the perils of childbirth are most imminent.

Let it be observed, moreover, that all such deliveries must be very rapid, for whatever may be said of the adroitness of the practitioner to push the umbilical cord into a safe place, into some snug corner on the side of the projecting promontory of the sacrum; yet the stern fact is continually recorded that the transit must be speedily effected, or the child perishes from pressure upon the funis or suspension of the placental functions. Dr. Barnes limits the time to five minutes.

Neither let it be forgotten that all the compression made upon the fœtal head is exclusively through the medium of the mother's tissues, nothing in this respect is done by the practitioner. The head being dragged through a contracted opening, is diminished by the unyielding walls of the pelvis, too often to the irreparable injury of the bladder, vagina, and even of the rectum.

Let this be contrasted once more with delivery in a case of vertex pre-

sentation by means of a *properly constructed* long forceps. These may be safely applied as soon as the os uteri is fully dilated and the liquor amnii evacuated, while the head is still movable at the brim. Compression can be gradually made, according to the necessities of the case, in an equable manner over the sides of the child's head, and traction can be effected in the direction of the axis of the brim, causing the head to descend, preserving the synclitism of the equatorial circumference of the head with that of the orifice of the uterus and of the superior strait. The child's head is thus brought down in a state of flexion, its occipito-mental diameter coincident with the axis of the pelvis, and in perfect accordance with nature's mode of delivery. Haste is no longer necessary, the child is comparatively safe, the functions of the placenta and funis not being disturbed. The accoucheur can act slowly and judiciously, exercising no more compressing or tractile force than is absolutely demanded, and always acting during a pain, thus receiving assistance as far as possible from the mother, and at the same time diminishing his grasp of the head during the intervals of the bearing-down efforts, thus allowing, to some extent at least, the diminution of cerebral congestion.

A very important advantage of this mode of delivery is that the requisite diminution of the head is effected to a great degree by the forceps, and not exclusively by the tissues of the mother, and hence there is far less danger of subsequent inflammation, of abscesses, sloughing, etc., by which so many lives have been lost or been rendered perfectly miserable. If these views be correct, the "formidable steel instruments," as they are characterized by Prof. Simpson, become a great blessing in comparison with the powerful muscular force suddenly and rapidly directed upon the delicate neck of the fœtus, that its head may be compressed and forcibly dragged through the contracted opening of the brim. This, also, often by obstetricians who disregard the proper synclitic movement of the head, causing the long instead of the short diameter of the cranium to present, aggravating the difficulties and dangers of the delivery.

The strongest point taken by Prof. Simpson in his able argument is that when, by traction on the neck, the head is forced to descend where the conjugate diameter of the pelvis is shortened, the bi-frontal diameter, and not the bi-parietal, intervenes between the promontory and the pubis. In other words, that the large, broad portion of the head actually descends on one side of the median line. It results that as this bi-frontal diameter seldom measures more than three inches when drawn from the fronto-parietal suture upon one side to that of the other, that much less compression of the head will be requisite than if the bi-parietal were concerned. Dr. Simpson founds this opinion on the fact that the indentures upon the child's cranium, caused by the promontory of the sacrum, are found on the temporal, and not on the parietal, regions of the head. We are not disposed to controvert this view, which is ingenious. Nevertheless, even if the pelvis be

of usual size, such a fact could hardly be anticipated, and it becomes very improbable, therefore, if there should be any diminution of the bis-iliac diameters of the strait. Moreover, the regular concavity of the anterior walls of the pelvis receiving the convexities of the head, would so facilitate a rotatory motion that if the promontory of the sacrum impinges upon the temporal region, the opposite point would be not the frontal region, but the occipital region, hence the pressure at the symphysis pubis would be not in front of, but posterior to, the parietal protuberance. If this be correct, the argument of Dr. Simpson would be of no avail. The question, however, cannot be easily determined, and must be left to future investigation.

We may observe, that if it be true that the largest portion of the head in these pelvic deliveries, in contracted pelvis, will descend on one side of the median line so that the bi-frontal diameter becomes engaged between the sacrum and the pubis, it must be equally true in vertex deliveries, for, owing to the convexity of the lumbar vertebræ or the promontory of the sacrum, there must be a great tendency for the head to descend on one side of the pelvis, provided in either case there should be sufficient space. This may be well doubted, but, at any rate, no argument we think can be drawn from this declaration of Dr. Simpson, in favour of podalic version in preference to vertical deliveries.

Dr. Barnes, in his recent work on *Obstetric Operations*, sustains very much the same doctrine and practice as Professor Simpson. As a general rule, he limits the use of the forceps to cases where the conjugate diameter measures $3\frac{1}{2}$ inches, and if the diameter is shorter than this, he prefers version. He has little confidence in the compressing power of the forceps, and does not consider this power safe for the child. Nor that the tractile power of the forceps is equal to that which may be exercised manually on the body of the child. "Surely no one can doubt that the traction power, and therefore the compressing power, acquired by pulling on the legs and trunk, is infinitely greater than can be exerted by the strongest forceps." (p. 240.) We must be regarded as heretics not to receive this *dictum ex cathedrâ*, especially as we have been accustomed to employ forceps which can make compression upon the head, and the handles of which are so long as to superadd a good leverage power to that of compression and traction. Perhaps here, therefore, lies, as we have already mentioned, and as Dr. Barnes himself hints, the real difficulty of deciding the question as to the relative importance of the superiority of the forceps or version in contracted pelvis. Dr. Barnes also believes that the bi-frontal diameter is "nipped" between the pubis and sacrum, and that the broad part of the head, therefore, descends upon one side of the pelvis. Moreover, he declares that chloroform should be employed *chiefly* during extraction. He thus discards, unscientifically, and, it may be said, unnaturally, the *vis à tergo*, or bearing-down efforts of the mother, which

have always been regarded as important to maintain flexion of the head, in pelvic deliveries, as well as to cause the descent of the child. Dr. Barnes maintains, also, that the base of the head descends first, and hence that the bi-mastoid diameter is the first that is involved, and that the sides of the head are compressed in the direction of the lateral wedge from the bi-mastoid to the parietal protuberances. This in his practice must doubtless be true, as he makes traction simply through the neck, thus bringing down prematurely the posterior part of the head, causing the chin to depart from the breast, and thus converting the natural presentation of the chin to one of the base of the cranium; hence, the proper synclitism of the equatorial plane of the head is destroyed, the forehead and not the anterior fontanelle is towards the side of the pelvis, and the occipito-frontal or long diameter of the cranium, instead of the cervico-bregmatic, is involved, necessarily enhancing the difficulties of the labour. It does not appear that he has any other resource in such an emergency than muscular force directed to the neck of the child. The direction given is, to draw down by the fingers of one hand, or by a handkerchief over the shoulders of the infant, while the other hand is employed by pulling upon the feet and legs. Neither is it clear what advantage Dr. B. proposed to derive from this powerful extension made upon the whole limbs and body of the child, instead of making it simply from the upper portion of the chest. It is, however, evident that all such traction made upon the head through the medium of the cervical vertebræ, is in contravention of nature's plans. The occiput receives the chief force, as the vertebræ are attached to the posterior or short arm of the lever of the head, which therefore descends first, while the anterior portion of the head, or long arm of the lever, is acted upon not directly, but secondarily; hence the chin would depart from the breast, and the occipito-frontal diameter becomes concerned, demanding an increase of tractile power. The danger of this displacement of the head is enhanced by the fact that Dr. B. recommends anæsthesia chiefly during the process of extraction. It must be supposed that he means "surgical" anæsthesia, in which case the bearing-down efforts of the mother, or the *vis à tergo*, will be suspended, and the natural tendency of the face to descend first is counteracted. The presentation of the base of the cranium, which is unnatural, is substituted for the natural presentation of the chin.

Dr. Barnes does not leave us in doubt upon this subject. He depends exclusively upon traction. In his 17th chapter, page 206, he says:—

"There is one practice commonly taught which is, I believe, based upon erroneous observation. You are told to pass a finger into the mouth, or to apply two fingers on the upper jaw, to depress the chin, in order to keep the long axis of the child's head in correspondence with the axis of the pelvis. Now this is a piece of truly 'meddlesome midwifery,' because it is perfectly unnecessary. The chin is not likely to be caught on the edge of the pelvis or elsewhere, unless, by a previous piece of 'meddlesome midwifery,'

you have been busy in 'giving the turns.' The truth is, Nature has taken care to arrange the convenient adaptation of means to end in head-last labour as in head-first. It is true that the occipito-spinal joint is seated behind the centre. It might, *prima facie*, appear that the occiput, forming the shorter arm of the head-lever, would tend to roll back upon the nucha. But this is not so in practice. The broad, firm expanse of the occiput, forming a natural inclined plane directed upward, is surely caught by the walls of the parturient canal as the head descends. The greater friction thus experienced by a larger superficies, favourably disposed, virtually converts the shorter arm of the lever into the more powerful one; it is more retarded in its course; and, therefore, the chin is kept down near the breast, and therefore, again, there is no need for the obstetrice to meddle in the matter."

This is strong and decided language on the part of Dr. Barnes. If, as he says, it be a subject of mere experience, the question might be asked whether the observation of Dr. Barnes, or that of the mass of the profession, is "erroneous." Dr. B., however, asserts that the chin remains in contact with the sternum, notwithstanding all the powerful traction upon the neck.

This not only is inconsistent with general experience, but, it would appear, with the author himself, as he repeatedly declares that the base of the cranium comes down first; that the bi-mastoid diameter is primarily involved, and indorses Prof. Simpson's notion of the importance of the lateral wedge. Certainly, if the chin remained upon the sternum, the bi-mastoid would not be concerned before the bi-temporal, or even the diameters extending from the anterior part of one parietal bone to the other. Neither could it be affirmed, with any correctness of language, that the base of the cranium presented, which would involve the occipito-frontal diameter. It is in reality a presentation of the chin, which presupposes the short instead of the long diameters of the cranium. Dr. B. acknowledges that, *prima facie*, the short arm of the head would be brought down by traction upon the vertebræ, but he endeavours to obviate this by alluding to the broad expanse of the occiput as affording more resistance than the anterior portion. There may be some truth in this, but all such resistance to the occiput is counteracted by the greater length of the anterior part of the head, by the diminution or actual suspension of the natural *vis à tergo*, from the bearing-down efforts directed at the top of the head, and mainly by the fact that great muscular force is applied by the obstetrician to the posterior part of the head; it is useless, therefore, to refer in such cases to nature having made adequate arrangement of means to an end in head-last labour, as in head-first. The truth is, that this mode of delivery is altogether artificial. The *vis à fronte* is substituted for the *vis à tergo*. The traction power is directed chiefly upon the posterior part of the head, and not upon the anterior. Naturally the forehead and the chin are first depressed, the depression of the former insuring a presentation of the chin with the short diameter of the cranium, the latter, a

presentation of the base involving the long diameter. The proper synclitism of the equatorial circumference is destroyed.

The experience of Dr. Barnes, of Dr. Simpson, and of numerous obstetricians who have acted upon their suggestions, proves, no doubt, that by simple traction upon the spine, powerfully made, the head may be delivered in many cases safely, even when the conjugate diameter is contracted. The appeal, however, may safely be made to the experience of these gentlemen themselves, and more especially to the mass of the profession, as to the frequent failure of this operation; hence, a dread has always existed in the minds of practitioners as to podalic version, even in common cases of labour, and of course still more where there is deformity of the pelvis, or even great rigidity of the cervix and os uteri. Death to the infants in these complicated cases, says M. Capuron, indorsed by the experienced and scientific M. Cazeaux, is in the proportion of two-thirds or three-fourths of the number. The array of facts and the ingenious reasoning of Prof. Simpson do not, as it yet appears, mitigate this unfortunate conclusion. Version of course should be preferred, in all cases, to craniotomy, but seldom to delivery by a forceps of sufficient power, and capable of assisting in the compression of the head.

All these criticisms regarding delivery of the head through the superior strait or brim of the pelvis, apply with equal force to its transit through the pelvis and vagina. We again quote from Dr. Barnes. "The real problem is to get the head out of the pelvis. There are two principal modes of doing this. One is to apply the forceps." Dr. Barnes prefers manual delivery to that by the forceps, in opposition to Busch, Rigby, Meigs, and, it may be added, to Prof. E. Wallace. As to manual extraction, he says :—

"Remember that the head has to perform a double rotation in its progress. It must revolve around the symphysis pubis as a centre; it must rotate in the cavity on its vertico-spinal axis, so as to bring the face into the hollow of the sacrum. You must then, in extracting, respect these natural movements. You will better follow or guide these movements if you fork the fingers of one hand over the neck behind, and at the same time, holding the legs with the other hand, draw down with careful attention to the curve of Carus. If you carry the body forward too soon, you simply convert the child's head into a hook or cross-bar, which, holding on the anterior pelvic wall, will effectually resist all efforts at extraction."

Certainly, every scientific man should respect these two natural movements, but it does not appear how Dr. Barnes would do this. As to rotation, we read of no directions about pressing upon the side of the face or the side of the occiput, to determine the one to the sacrum, the other to the pubis. The simple rule given is to fork the fingers of one hand over the neck behind, and at the same time with the other hand to hold the legs and draw down. This practice is the universal one adopted by the ignorant midwife, as well

as by the scientific obstetrician, and, owing to the conformation of the pelvis and the head, rotation usually occurs; but if unfortunately the head should remain oblique in the pelvis, what then? Is traction the only resource?

Dr. B. says this rotatory motion of the face to the hollow of the sacrum is made on the "vertico-spinal axis." By this word is doubtless meant a continuation of the axis of the spine to the top of the head. With Dr. B.'s views of the mechanism of labour, that the base of the head descends first, that the compression of the head is made laterally from the mastoid process upwards, and not from the face towards the occiput, he is correct. If, however, the chin be at the sternum, and flexion of the head be maintained, rotation will be not upon the vertical, but upon the occipito-mental diameter, and will then be effected more readily. At any rate, this is Nature's mode of delivery.

Again, Dr. Barnes directs, very properly, that the head should be drawn directly downwards at the commencement of extraction, in the direction of the axis of the brim. He cautions, that, if the body is carried forward too soon, the head will be converted into a cross-bar, and delivery resisted. It is difficult to comprehend how carrying the body forward can place the head in a "cross-bar position." That this position, by which is to be understood having the occipito-frontal or occipito-mental diameter involved, instead of the cervico-bregmatic, can be accelerated, if not actually insured, by Dr. Barnes's mode of delivery, by simple traction, can be easily comprehended. But, carrying the body forward would appear rather to obviate this disposition to malpresentation, than to increase it, inasmuch as the occiput would be drawn closer to the anterior part of the pelvis, and thus meet with more resistance to its descent, and rather facilitate the descent of the anterior portion of the head. The head having thus been brought through the cavity of the pelvis, and rotation having occurred so that the face is directed towards the sacrum, and the base of the occiput behind the symphysis pubis, how is delivery to be effected? The advice almost universally given is by traction in the direction of the axis of the outlet. Fig. No. 68, page 207, of Dr. Barnes's work, exhibits the child in this position, with the hands of the accoucheur upon the shoulders and legs, and clearly displays Dr. Barnes's method in accordance with common practice. That the children are thus frequently born alive, there can be no doubt, especially when the perineum is much relaxed, as in multiparous women; but if the perineum be at all rigid, great muscular power must be applied. The failures, however, as to the safety of the child, are very numerous. They are, indeed, so frequent, that the anxiety of even experienced accoucheurs at this crisis is great. Speedy delivery is an absolute necessity. Most practitioners rely simply upon traction, sometimes not only by the strength of one, but of two individuals, while the mother, conscious or unconscious, must be retained on her bed by three or more nurses or friends. These great efforts are often without success. The fœtus per-

ishing, and in some cases the tissues of the pelvis and the perineum have been severely bruised or lacerated, the neck has been injured, or even torn asunder, so that a headless body is presented as the result of so much labour.

To obviate such dangers, many suggestions have been made. Thus, it is proposed to push back the perineum, and to open the mouth of the infant; or to pass a tube over the tongue, that atmospheric air may be admitted and respiration excited, that more time may be allowed for the delivery. Dr. Barnes has, in this way, kept a child alive for ten minutes.

Others recommend the forceps. My excellent friend and co-labourer, the late Prof. Meigs, always advised to have this instrument at hand, that it might be employed as soon as the emergency occurs. Nevertheless, there is a serious objection to the forceps in most of these cases, even if they should be at command. Let it be remembered that traction has been made in the axis of the inferior strait through the cervical spine, and the occiput is, therefore, hooked against the pubis, and the chin against the os coccygis or against a rigid perineum; hence the "vertico-spinal axis," as it is termed by Dr. B., is coincident with the axis of the outlet, and hence the blades of the forceps, directed to the sides of the head, would be parallel to the perpendicular or trachelo-bregmatic diameter of the head. For it would be hardly possible to carry the handles of the instrument far enough back so as to give the blades a direction parallel to the occipito-mental diameter. The forceps, therefore, thus applied, might injure the tissues of the scalp; the points would project above the cranium, endangering the tissues of the mother, and any traction made through them will draw down the head in this faulty or "cross-bar" position; nevertheless, as they would in this case act chiefly upon the anterior part of the head, and as the descent of the occiput is resisted by the pubis, they will often succeed when mere traction in the axis of the outlet has failed. They should, therefore, not be neglected, notwithstanding these risks, in certain emergencies.

There is, however, a more excellent way. It is founded on the natural modes of delivery. In normal cases the mother delivers herself in breech presentations without difficulty. The *vis à tergo*, from the commencement to the termination of the second period of labour, acting from above downwards, produces and maintains flexion of the head so that the chin descends first, and the cervico-bregmatic plane of the head becomes parallel to that of the inferior strait, and to each successive plane of the whole obstetric canal to its termination at the vulva; and the occipito-mental or long diameter of the head is coincident with the axis of this canal.

The rule of practice deduced from this fundamental fact is to facilitate and maintain this flexion of the head by every practical method, whenever artificial assistance is demanded, that we may secure the parallelism or synclitism of the equatorial circumferences of the head to those of the pelvis and vagina.

It is not "meddlesome midwifery," therefore, to place two fingers upon each side of the nose of the child to maintain flexion, while at the same time traction be made through the spine. On the contrary, it is an important adjuvant to the bearing-down efforts of the mother, facilitating the descent of the head, so that less muscular effort shall be made by the practitioner. This mode of maintaining flexion should be continued until the face and forehead have passed the os coccygis, and press upon the perineum. Now the direction of the extracting force should be entirely altered, no longer in the direction of the axis of the outlet, but, the patient being upon her back, *directly upward*. A little reflection will show that traction thus made must increase flexion, as well as cause descent of the head. For the base of the occiput is now immovably fixed at the top of the pubic arch, and all the force directed through the spine now, in a vertical position, acts indirectly upon the front part of the head, causing it to descend, while the chin approximates more and more towards the sternum of the infant. The head then acts as a lever of the third kind, the fulcrum being at the arch of the pubis, the power acting through the cervical vertebræ causing the long arm of the lever, represented by the anterior part of the head, to descend. This all-important process of flexion can now be assisted by the fingers of the practitioner directed through the median of the posterior perineum, in front of the coccyx, against the top of the head; and finally and most effectually, as the head stretches the perineum, by passing one or two fingers into the rectum so as to press upon the top of the forehead. By these measures the parallelism of the equatorial plane of the head with the planes of the vagina is secured, the chin appears at the centre of the vulva, and hence the occipito-mental diameter is coincident with the axis of the orifice of the vagina. In this case everything is most favourable for the transmission of the head, not only because its proper synclitism is secured, but the head is engaged so that the long, tapering wedge, extending from the chin to the parietal protuberances, descends first, and the power directed to the head by traction through the spine and the pressure upon the os frontis is very efficient, and, at the same time, safe.

Many years have elapsed since I have adopted this mode of operating at the outlet of the pelvis, effecting delivery with so much comparative ease that I have seldom, if ever, resorted to the forceps, or been under the necessity of exciting respiration prior to the escape of the head.

Should, however, any unusual difficulty present, from great size of the head, from deformity of the bones, from unusual rigidity of the perineum, or the presence of induration, cicatrices, etc., then the forceps may be applied *secundum regulam*; that is, the blades could be readily passed in the direction of the occipito-mental diameter on the sides of the head, and traction be made in the axis of the orifice of the vagina, so that the head would be made to descend with the occipito-bregmatic plane parallel

with that of the vulva; the synelitim would be perfect, and Nature's mode of delivery, which must be best, will be exactly imitated.

It would be useless to give further illustrations of the great practical importance of this subject. If the views presented of Nature's mode of delivery of the head in pelvic presentations be correct, and if the deductions from these facts as to the proper treatment of these cases be substantiated, two results will be apparent:—

First. That simple tractile force should not be the sole recourse of the practitioner, but that flexion of the head should be insured and maintained.

Second. That the operation of podalic version should always be regarded not as one of choice, but as one of necessity. It is fraught with danger to the infant and to the mother in all complicated cases; it demands great skill and experience for its execution; numerous, and often unexpected, difficulties are apt to be interposed, and yet the time allotted is exceedingly short. The whole process of descent must be accomplished in a few minutes, or the child, for whose benefit these risks are incurred, will perish.

ART. II.—*Experimental Researches on the Physiological Action of Nitrite of Amyl.* (Memoir to which was awarded the Warren Prize, for 1871, of the Massachusetts General Hospital.) By HORATIO C. WOOD, Jr., M.D., Prof. of Botany in the University of Pennsylvania, Physician to the Philadelphia Hospital, etc.

NITRITE OF AMYL is a somewhat oily liquid, of a light yellowish colour, and a peculiar, very penetrating and persistent, fruity odour, which has been compared to that of over-ripe pears. It is very volatile and inflammable, and, as far as I know, insoluble in all pharmaceutical menstrua. Mr. Storer, in his *Dictionary of Solubilities*, mentions it, but gives no solvent for it, nor has experimentation afforded me any positive result. This essay is of course not the place to discuss its chemistry, but it is proper to state that my experiments have been made with two distinct parcels or specimens of the drug, which entirely resemble one another both in their physical characters and their action upon animals. One of these samples was imported by Mr. Spangenburg, of New York city, but from whom he obtained it I do not know. The other was manufactured by Prof. Maisch, of the Philadelphia College of Pharmacy, by Ballard's process as modified by Hoffmann, and accords in all respects with the description of the pure article given in Gmelin's *Handbook of Chemistry*.

In 1859 Guthrie called attention to the flushing of the face and throb-

bing of the carotids caused by inhalation of nitrite of amyl, but it was not until 1864 that any notice was taken of his remarks.

In that year Dr. B. W. Richardson made a detailed report to the British Association for the Advancement of Science, in which he arrived at the following conclusions:—

1. It is absorbed by the bodies of animals, however introduced into the organism, by the skin, by the stomach, by the lungs, or by the cellular tissue.

2. After its absorption, its effects are seen immediately on the heart and circulation; there is in the first instance violent action of the heart, with dilatation of the capillaries, followed by diminished but not extinguished power of the heart, and contraction of the extreme vessels. As an excitant of vascular action, the nitrite of amyl may be considered the most powerful agent as yet physiologically discovered.

3. On animals, such as frogs, whose bodies admit of its removal spontaneously, and whose circulatory and respiratory systems are simple, the nitrite suspends animation; and when the animals are placed under favourable conditions for the process of recovery, they may recover after considerable periods of time. There is no other known substance that suspends animation in these animals for so long a period. On warm-blooded animals which are clothed in thick and less penetrable skins, and in whose bodies the circulatory and respiratory systems are more complicated, the nitrite cannot actually stop the movements of respiration and circulation without destroying life. But even in these animals it can, without destroying life, reduce the forces of respiration and circulation so extremely that a condition precisely analogous to what is known as trance or catalepsy in the human subject can be brought on and sustained for many hours.

4. The nitrite of amyl is not anæsthetic; by it consciousness is never destroyed, unless a condition approaching death be produced.

5. The effects of the nitrite on the organism are directed to the motor force, which it first wildly excites and then subdues.

6. The *modus operandi* of the nitrite appears to be by arresting the process of oxidation in the tissues.

7. Physically the nitrite holds a place between the volatile bodies, such as chloroform, and the solid bodies, such as opium and woorara. Hence its effects are less evanescent than those of very volatile substances, and less certainly destructive than the solid substances. In this lies the secret of its prolonged action.

Dr. Richardson also concludes that the nitrite paralyzes the nerves from the periphery to the centre, lessening the contractile power of the arteries.

The experiments of Dr. Richardson were shortly afterwards repeated by Drs. Gamgee and Rutherford, with somewhat different results. I believe their experiments are as yet unpublished. The only record of them known to myself is contained in a paper by Dr. Brunton, who states that Drs. Gamgee and Rutherford found

“No action on the nerves, either sensory or motor, and rarely on the capillaries of the frog. . . . And the pulse-rate and pressure in a mano-

meter connected with the carotid of a rabbit fall when the vapour of the nitrite is inhaled."

Dr. Brunton's own experiments were mainly, if not entirely, directed to the effect of the substance on the circulation. They were made in the laboratory of Prof. Ludwig, at Leipzig.

"With the exception of one or two on dogs, they were made upon rabbits; and, instead of allowing the animals simply to inhale the vapour, artificial respiration was employed, the apparatus being so arranged that the air could be either sent directly from the bellows, through a tube in the trachea, to the lungs, or passed through a vessel containing the vapour of the nitrite. The advantages of this arrangement were, that the bellows being worked by an engine with great regularity, the disturbing influences of unequal respiration on the blood-pressure were to a great extent avoided. When air charged with the vapour was passed directly into the trachea of a rabbit, the blood-pressure almost immediately sank very much, but the pulse-rate remained nearly unchanged. As the pressure sank, general convulsions took place, and the pressure immediately rose notwithstanding the continued inhalation of the vapour. When, however, convulsions were prevented by the use of curara, the blood-pressure diminished at first as above, but did not regain its normal amount so long as the inhalation was continued."

I believe the results thus given comprise almost all that is known of the action of the nitrite of amyl. It is very plain that they are, in a measure, contradictory, but they are amply sufficient to show that the substance has some very peculiar physiological powers, and to call for a thorough investigation of the subject. This demand is strengthened by the asserted good results that have been obtained abroad by its use in several cases of angina pectoris and of tetanus; enough experience to give ground for hope that practical therapeutics may be benefited by the inquiry.

My first series of experiments were directed simply to the study of the general, apparent symptoms induced by the drug, the mode in which it usually kills, and the post-mortem appearances. The experiments are as follows:—

Expt. 1.—October 20. A kitten two or three months old. Twenty or thirty drops of the nitrite were given by inhalation. Died in a few minutes, without struggling.

Autopsy immediate.—Heart beating vigorously, and continuing to do so for ten minutes after the cessation of respiration. Blood everywhere dark, no distinction between arterial and venous. Bowels quiescent, but vermicular motion easily aroused by electricity.

Expt. 2.—A very strong terrier, of moderate size. 3.45. Two drops of the nitrite inhaled from a chip, and then the bottle held close to the nostrils for two minutes; directly the dog gave a tremendous bound, very suddenly breaking from his fastenings. 4.4. Injected one drop. 4.7. Injected between three and four minims. 4.33. Injected ten minims into peritoneal cavity. Had been howling before this, but at the time of injection was quiet; immediately afterwards commenced to howl again. 4.34. Very violent struggles, coming on suddenly, accompanied by forcible urination. 4.37. No material change; the breathing diaphragmatic, noisy, spasmodic, laboured. 5.10. Dog let up, able to walk. Following day (10 mo. 4), seems pretty well, except the leg into which a cardiometer nozzle had been inserted. 10 mo. 5. Very much weakened by secondary

hemorrhage. Twenty minims of nitrite inhaled. Death in a few minutes, without struggling.

Autopsy immediate.—Lungs whitish. Heart presents curious vermicular waves of superficial motion running through it, the wave commencing apparently at base of the heart, running through auricles and ventricles to apex, and then back again to base. No distinction between arterial and venous blood.

Expt. 4.—4.34 P.M. Injected eight drops into peritoneal cavity of a young rabbit, and in 11 minutes twelve drops more. 4.48. Breathing very hurried; panting. 4.52. Rabbit still perfectly quiet. 5.07. Anaesthesia of cornea marked. Occasional convulsive startings. 5.10. Respiration ceased before heart.

Autopsy.—Everywhere quantities of dark blood. Spinal canal filled with it. Peristaltic action of the intestines very active.

Expt. 5.—Killed a large female cat by twenty-two drops of nitrite inhaled. Death without convulsions. Autopsy exactly as in last.

Expt. 6.—Pigeon. Four drops of nitrite inhaled. 5 min. Perfectly conscious, but respiration very much disturbed. 9 min. Five drops more administered. 11 min. Perfectly conscious; struggling violently. 15 min. Died in violent convulsions.

Expt. 7.—Adult pigeon. 8.56 P.M. Injected a mucilaginous mixture containing nitrite into peritoneal cavity. 9.3. Begins to breathe deeply and labouredly. 9.9. Breathing not now laboured. 9.15. Has been quiet; let up; seems very active; walks about lively.

These experiments show that, as stated by Richardson, the nitrite of amyl, when taken into the system in any way in warm-blooded animals, produces its constitutional effects. The train of symptoms that it gives origin to is somewhat peculiar, the most constant and prominent results of its presence being the rapid, deep, hurried breathing, and the steadily progressive loss of muscular power. Dr. Richardson states that the motive forces of the system are at first wildly excited, and then subdued. My experience does not at all coincide with this. In only one instance have I witnessed any early manifestations of motor activity. In this case (Experiment 2) the sudden effort to break away was apparently voluntary, and was very probably due to the natural repugnance of the dog to having a bottle filled with suffocative vapour placed close to his nostrils. In pigeons, convulsions are very frequently produced, but they come as a late symptom, only appearing when the bird is profoundly affected. Possibly the total absence of early convulsions in my experiments was in a measure due to their being chiefly made upon dogs, cats, and pigeons, since Dr. Brunton states, in one of his papers, that in rabbits the nitrite very frequently produces convulsions. That in the few trials I have made upon rabbits spasms have not been prominent, may be owing to the drug having been employed hypodermically, as the authority just quoted states that the convulsions are very probably suffocative. Convulsions are, however, almost as certainly produced by spinal depressants as by spinal stimulants. Thus they are a very constant phenomenon after the administration of veratria, viridia, &c. The frequency of their absence after the use of the nitrite of amyl is somewhat peculiar; but their association, when present, with a steadily progressive paresis is unmistakable evidence that they are

not owing to an excitement of the motor system. They never appear to be produced in a reflex manner by external excitants, but seem to be always centric in their origin.

One of the most interesting results of such experiments as those already described is to indicate the general method of death after the administration of lethal doses. My experience clearly shows that, in warm-blooded animals, the respiratory system is more profoundly affected by the amyl salt than the circulatory, respiration in all cases ceasing before the heart's action. Of course the continuance of the heart-throb in adult warm-blooded animals can endure only two or three minutes after respiration ceases. It is well known, however, that in this respect young mammals resemble the reptiles rather than old warm-blooded animals, and accordingly, in Experiment 1, the heart of a kitten continued its rhythmic motions ten minutes after the nitrite of amyl had put a stop to all respiration whatever. The action of the heart, however, although not stopped, is, as shall be shown in detail hereafter, always greatly affected.

The post-mortem appearances are peculiar in one respect only, namely, the coloration of the blood. There are no lesions of the solids, nor have I been able to find anywhere any indications of active congestion. The arterial and venous blood are nearly or entirely indistinguishable. The colour approximates that of normal deoxygenated blood, but is very distinct from it. The bluish tint is wanting, being replaced by a brownish, so that tobacco-spittle is suggested, although the tint is again quite distinct from that of that disgusting compound. The coagulability of the blood seems not to be impaired. The red corpuscles under the microscope do not show anything peculiar, unless it be that they are not quite so eager to adhere, and become crenated under less provocation than normal. It is quite probable that very careful use of the medicine might induce a trance-like condition of the animal, as spoken of by Dr. Richardson; but I have never seen, except in one case, anything resembling it. In this experiment, which will be detailed when the effects of the drug on animal temperature are discussed, a pigeon was thrown into the condition which I suppose Dr. Richardson refers to, yet, after all, it was much such as is seen when anaesthetics are administered. Consciousness, however, is always lost very late, instead of very early.

On cold-blooded animals, as represented by frogs, the nitrite acts very much as upon mammals. Dr. Richardson states that he has suspended animation for a very long time in frogs, the batrachians eventually recovering entirely. I have made no experiments bearing upon this point. The investigations of Dr. Fraser upon atropia, however, have shown that apparent death from that drug may occur in the frog, and last many hours, or even days, when it yields to a state of greatly augmented reflex excitability, from which the frog may or may not finally recover. There is, therefore, nothing so unique in this action of the nitrite as was at first

supposed. The following experiments will serve to illustrate the symptoms that the nitrite of amyl has produced in my hands when administered to frogs. It will be seen that the only prominent symptom was constantly increasing loss of muscular power. While studying the action of the poison upon the nervous system, hereafter, there will be detailed a number of other experiments upon frogs, which agree well with the one about to be noted. In no case have vigorous general convulsions been produced, but in some instances there would be sudden, electric-like motions, resembling those of jumping, but evincing great loss of power.

Expt. 8.—5.22 P.M. Injected a drop of nitrite into the thigh of a moderate-sized frog. 5.52 Apparently as before injection; threw two minims into the belly. 5.54. Lying perfectly quiet; hardly able to turn from back to belly. 5.58. Respirations irregular; heart still beating. 6.5. Respiratory movements almost ceased. 6.17. Heart now beating regularly and strongly.

Having now studied sufficiently the gross symptoms produced by nitrite of amyl, it remains to investigate its action more in detail upon the various parts of the economy, and finally to discuss the method of its action.

Under the first of these heads is comprised its action: 1. On the nervous system; 2. On the muscular system; 3. On the circulation—including the heart, arteries, and vaso-motor nerves; 4. Its influence on tissues when applied locally. These points I shall discuss in the order in which they stand. It is evident that the first two can be most readily discussed together.

That nitrite of amyl usually produces, when taken into an animal, progressive loss of muscular power, has already been shown, and the experiments hereafter detailed corroborate entirely those already given. There are but four ways in which the drug can cause paralysis: 1. Impairment of the will power to arouse the motor ganglia of the spine; 2. Impairment of the power of said ganglia; 3. Impairment of the conducting power of the nerves; 4. Impairment of the contractile power of the muscles.

The first of these methods is conceivable, rather than practical, for there is at present no known substance which will, without suspending consciousness, so influence the cerebral ganglia as to forbid their acting upon the spinal cord. I know of no proof that the nitrite of amyl possesses any such peculiar power, and its action can be traced to other parts of the nervous system, so that it seems pardonable to take for granted that it has not such power, and to limit the discussion to the other points.

The next series of experiments will be directed to determine whether fatal doses of the nitrite destroy, or not, the conducting power of the nerves or the contractility of the muscles.

Expt. 9.—5.22. Injected into thigh of a moderate-sized frog one drop of nitrite. 5.52. As before injection; put two minims into belly. 5.54. Hardly able to get from back on to belly. 5.55. Lies quiet on back. 5.56. Has frequent convulsive movements of legs. Opened thorax. Heart beating actively. 6.5. Heart still beating. Very infrequent respiratory motion. 6.11. Galvanization of crural nerve causes active motion of muscles supplied. 6.17. Heart

beating regularly and strongly. 6.20. Galvanic and mechanical stimulation of spinal cord excite repeated and marked general muscular contractions.

Expt. 10.—4.51. Injected four minims of nitrite into belly of a small frog. 4.52 General, apparently perfect, paralysis. 4.57. Heart beating very slowly. No other signs of life. 5.2. Has made several spasmodic efforts to jump. Shows no signs of feeling. Galvanization of crural nerve causes active contractions of muscles supplied. 5.12. Galvanization of spinal cord, both high up and low down, induces active motion of legs.

Expt. 11.—A moderate-sized frog, quite lively, having been some hours in a warm room. 3.15. Injected about three minims. 3.18. Signs of weakness, breathing laboured. 3.20. Lies on back quietly when placed there, although still able to jump when aroused. 3.25 Unable to jump his own length: has just had an apparent convulsion, which did not, however, exhibit any power. 3.28 Muscular motion, except respiratory, abolished. 3.30. Exposed heart, which is beating freely; frog showed no signs of life during operation. 3.37. Apparently reviving; pulls away his leg when it is pricked with a knife. Respiration more frequent. 3.42. Pulsations of heart have ceased, although respiration still persists. At times strong convulsive movements of feet. 3.45. Pricking heart causes a single attempt at motion. The auricles distended; the ventricles whitish, bloodless. 3.53. No respiration for some minutes, although there are still occasional active motions resembling those of jumping, but not decidedly voluntary; powerless to raise body from ground. 3.55. Galvanization of crural nerve causes free motion of muscles supplied.

From these experiments it is evident that neither the conductivity of the nerves, nor the power of the muscles of responding to impulses, is destroyed by nitrite of amyl. My experience affords no evidence whatever that there is produced, as asserted by Dr. Richardson, a paralysis of the extreme filaments of the nerve. The crural nerves were isolated in such a manner that I think it impossible there should be any transmission of the galvanic current itself to the muscles, and yet the latter never failed to respond to the application of the current. Moreover, mechanical stimulation of the nerve, such as pinching, would cause muscular contractions in the part supplied. While, however, there can be no doubt that the paralysis was not due, in these experiments, to destruction either of the conducting power of the nerves or of the contractile power of the muscles, yet it appeared to me that the contractions were less forcible than if both of these were normal, and that there might be a lessening of either one or the other.

The following experiments were undertaken to determine whether the conducting power of the nerves was affected at all or not:—

Expt. 12.—Two frogs of moderate size, alike in all respects. 2.58. Injected two and a half minims of the nitrite into flank of one of the frogs. 3.25. Frog universally paralyzed; apparently dead; exposed crural nerve and placed it on a silver grooved director, then touched it with iron forceps moistened with strong solution of salt, then put the solution freely on the nerve; no motion was elicited, although, where the solution touched the muscle, it excited strong quivering motions. Pure salt was then put on nerve, without result for nearly half a minute, when active twitchings of muscles of leg were aroused, producing feeble motions of toes, but no general movement of foot or leg. The above-described procedure was now gone through with on the other leg, with similar results, save that the twitchings followed more closely upon the application of the salt to the nerve. The spinal cord of the other frog was now cut high up, the crural nerve of one thigh exposed, and the moistened forceps applied as above;

active motion was immediately induced. The salt solution, when applied to the nerve, induced very active tonic and clonic contractions of muscles, the leg becoming firmly flexed, and the toes widely extended, and in a short time active movements were manifested all over the body. The spinal cord of each frog was now exposed; on applying salt to that of No. 1 (amyl frog), a few feeble movements supervened, whilst in doing the same to spinal cord of No. 2, exceedingly active and universal movements resulted.

Expt. 13.—Similar to the preceding in method and results.

These experiments show that the nitrite of amyl in lethal doses does affect the conducting power of the nerves. For whilst powerful stimulation of the nerve-trunk is immediately followed by muscular contractions, yet stimulation of a mild type, but sufficient to act very decidedly in the normal state, fails to produce motion. In Experiment 13, even the very decided application of salt to the nerve failed to cause any effect; and in Experiment 12 motion was only manifested, on similar provocation, after the lapse of a very appreciable period of time. I think these various experiments are sufficient to show, then, that the nitrite of amyl very greatly impairs, but does not entirely destroy, the conducting power of the nerve-trunks.

It is a point of some interest to determine whether the vital functions of the muscles themselves have also suffered detriment or not.

With this view the following experiment was performed:—

Expt. 14.—Two small frogs as nearly alike as possible.

No. 1. 8 P. M. Two and a half minims of the nitrite were injected low down into the right flank, so that the nitrite probably went to some extent into thigh. 8.10. All movement whatever suspended; frog apparently dead. Skinned the thighs and legs, and dissected out and removed the nerves. One of the muscles of the thigh was very much discoloured, evidently from local action of the nitrite. Salt was now sprinkled very freely over both thighs and legs. Very little motion was excited in the right thigh, not enough to move the leg; the discoloured muscle scarcely quivered. In the left leg there was very active quivering of all the muscles, so that the leg was moved slightly, and the toes considerably.

No. 2. The spinal cord was severed high up, the legs skinned, and the nerves removed as in No. 1. Salt was now applied freely to thigh and leg muscles, producing violent twitchings and contractions, and movements of the leg and toes very much more forcible and active than in the previous instance.

To establish exactly to how great an extent lethal doses of the drug under consideration impair muscular contractility, would require much more elaborate and repeated experimentation. This is not, however, necessary in order to establish the bare existence of such impairment. I think the above-detailed experiment is sufficient, especially when taken in conjunction with the fact indicated above, but which will hereafter be established, namely, that the local application of the nitrite to a muscle totally destroys its contractile power.

Having completed the investigation of the effect of the amyl salt upon the nerves and muscles, the following experiments were instituted to determine how far the motor centres of the cord are affected. It has already been shown that after death from the internal administration of nitrite of amyl,

it is possible by mechanical and chemical stimulation of the cord to produce slight convulsive movements in the limbs. This would seem to show that there is a little power of propagation of impulse remaining. The best measure of the capability of the ganglia of originating a motor impulse, that I am aware of, is the activity of the reflex actions, it being of course allowed that the conductivity of the spinal nerves is not seriously impaired. The following experiment was instituted to test the effect of the nitrite upon reflex action. It was not repeated, because sufficient corroborative evidence was obtained in certain experiments bearing upon another point, which will be detailed later in the memoir.

Expt. 15.—Two frogs.

No. 1. Moderate-sized frog. 5.12. Cut the spinal cord near the head. 5.14. Dropped on foot strong acetic acid; instantly most violent and rapidly repeated extensions and flexions of both legs occurred, ending after a time in their being strongly flexed on the abdomen. 5.25. Some difficulty in getting frog to lie with legs extended. When this is done, minutest portion of the acid causes leg to contract forcibly on body.

No. 2. A frog decidedly larger than No. 1. 5. Injected about three minims of the nitrite into right thigh. 5.5. When laid on back, unable to get off; can croak feebly and kick. Right leg rigidly extended, powerless. 5.7. Acetic acid dropped on right foot causes no motion. 5.10. Injured leg seems stiff; joints not bending fully with weight of body. 5.14. Acetic acid on uninjured foot causes very quickly violent movements, frog jumping violently with the right leg extended, motionless. 5.18. Acetic acid dropped on uninjured foot does not cause motion for several seconds, then a good deal of it. 5.20. Acid on left leg causes no motion for several minutes, and then the leg slowly and partially flexes on the abdomen. 5.25. Respirations very infrequent. Exposed heart; it is beating vigorously. Frog apparently conscious, tried to get away during the operation. 5.28. Frequent, sudden, general convulsive starts, as though produced by an electric shock. Right leg never partakes in these. 5.40. Frog motionless. Cut into right thigh; muscles all seem rigid, mechanical stimulation of nerve produces no motion. 5.42. Mechanical stimulation of spinal cord causes slight movements of muscles generally, save only of right leg, which remains stiff and quiet.

From this experiment it is obvious that there is a great lessening in the activity of the motor centres. The only objection that can be urged against trusting to it as evidence is, that it has already been shown that the conducting power of the nerves is much impaired by the poison, so that the apparent want of vitality in the motor ganglia may really be due to the affection of the nerve-trunks. The original impulse must, of necessity, be weakened by the time it reaches the centres, and the reflex impulse still further reduced by the time it arrives at the muscles. I do not think this double diminution is at all sufficient to account for the results obtained in my experiments upon the reflex excitability. Yet, in order to test still further the condition of the spinal centres, the following experiment was instituted:—

Expt. 16.—Two frogs of about the same size.

No. 1. Ligature passed through the body so as to include nerves and artery, and tightened, interrupting the circulation in hind legs. Three minims of the nitrite were now injected into the upper body. After death, acetic acid applied to foot caused no motion. Crural nerves exposed, and to one salt applied; motion

of muscles and foot occurred in corresponding leg. Very slight movements of other leg. Salt was applied to exposed spinal cord; very few movements whatever were caused.

No. 2. Ligature was applied as above, and ten minutes afterwards spine cut high up. Nerves of legs were now exposed, and to one salt applied; moderately active movements of the opposite leg occurred, decidedly greater than in No. 1. Motions of the leg to which the salt was applied also more active than in No. 1. Salt was now applied to the cord, causing very violent general movements.

These experiments are rather ruder than I like; it would have been better to have exposed the bloodvessels and compressed or tied them alone, but the small size of the frogs made this impracticable. That the circulation was very much interrupted, if not altogether checked, I have no doubt. That the nitrite did not freely penetrate into the hind legs of No. 1, is shown by the marked contractions of the muscles when salt was applied to the crural nerve. The nerve-trunks were therefore but very slightly impaired. Yet reflex actions were almost totally abolished; whilst in a similar frog, whose nerves and arteries had been exposed to at least as much pressure, they were quite active.

There is one very strong proof of the deficient power of the motor ganglia to which I have scarcely yet called attention, namely, the very slight effect that strong stimulation of the spinal cord itself has in inducing muscular contractions in frogs just killed by the nitrite. This was very manifest in Experiments 13 and 16. In the frogs whose spinal cord had been severed high up, the application of salt to the wound, and therefore to the cord, produced the most frightful spasms and contortions imaginable—intense opisthotonos, mouth stretched widely open, toes all spread out and stiffened, muscles everywhere jerking or rigid—whilst in the frogs killed by the poison, the sprinkling of salt on the spinal cord caused only feeble muscular twitchings.

The following experiment is interesting as having been made upon warm-blooded animals, and I think corroborates the opinions expressed in regard to the action of nitrite of amyl on the nervous and muscular systems:—

Expt. 17.—Two kittens of the same litter, between two and three months old.

No. 1. Rapidly killed by inhalation of nitrite of amyl. Autopsy: muscles everywhere contracting actively on galvanization. Crural nerve now being insulated, a weak induced current caused vigorous movements of the muscles supplied; no reflex actions whatever excited. A weak current was now passed through the insulated exposed cord, and elicited no movements.

No. 2. Stabbed to death. Galvanization of cord as before, with a similar current, produced active movements of the dorsal and lateral muscles, but no general convulsions.

The above experiment adds its mite to the store of evidence, and I think that it has been sufficiently shown that the nitrite of amyl is a powerful depressant of the motor system, affecting to some extent muscular contractility, to a greater extent the conducting powers of the nerve-trunks, and still more profoundly the central motor ganglia.

In regard to the action of the nitrite on the sensory ganglia, my experiments have convinced me, as has been before stated, that sensation is not abolished until very near death. I have little doubt that there is a diminution of activity in the sensory ganglia, but it does not appear to be so rapid as that of the motor centres.

The cephalic part of the cerebro-spinal axis is also very slowly affected. Consciousness is retained until the whole system is most profoundly influenced, nor have I ever been able to detect any perturbations of the special senses. Nitrite of amyl is, therefore, distinctly not an *anæsthetic*, the term being properly confined to those drugs which affect the centres of consciousness and feeling more rapidly and profoundly than those of motion.

The next point to be investigated, according to the plan of this inquiry, is the effect of the nitrite upon the circulation. From the passages already quoted, it is very plain that the conclusions of Drs. Richardson and Brunton do not entirely agree. Those of Dr. Brunton appear to have been worked out the most carefully and thoroughly, and his experiments are detailed. Dr. Richardson's results have been published in a number of places, but I have never seen any report of the experiments themselves, and therefore shall pursue the plan of examining the truth of Dr. Brunton's opinions first, and, if I find them correct, say no more about those of Dr. Richardson.

Dr. Brunton has published several papers upon this subject, the most important of which is one in the *Journal of Anatomy and Physiology*, vol. v., and another in *Der Bericht der Mathem.-Phys. Classe der Königl. Sächs. Gesellschaft der Wissenschaften*, 1869. The former of these is the later and fuller, but the latter contains the accounts of the experiments.

Like other similar papers, those of Dr. Brunton contain both assertions of facts, and conclusions drawn from these facts.

I shall first examine the truth of the former, and then endeavour to determine how far the latter are justifiable.

His facts are as follows :—

1st. Inhalation of the nitrite causes diminished blood-pressure, as tested by a cardiometer, with or without quickening of the heart's action, increase in the number of the cardiac beats per minute being especially seen in dogs.

2d. After section of par vagi, inhalations of the amyl salt still cause diminution of the blood-pressure.

3d. After division of the spinal cord in the neck, the nitrite still is able to produce lowering of the mercury in the cardiometer tube.

4th. That if the cord be divided in the neck, and the aorta be compressed in the abdomen, so as to check the flow of blood to the lower extremities, "a rise took place in the inhalation; but generally a sinking, much less, however, than in the normal condition."

The experiments proving the above are given in the German paper before spoken of. It is somewhat unfortunate that more details are not published, but I copy a few of the experiments as they are given, because to most medical men the *Bericht*, &c. is an inaccessible book. Instead of transcribing all, I limit myself to a few typical ones. When the animal was poisoned with curare, it was done with the idea of avoiding the disturbance of circulation which the altered breathing and the frequent occurrence of convulsions gave rise to, a regular, steady, artificial breathing being substituted for the natural unequal one.

No. of experiment.	Time in seconds.	Inhalation of nitrite.	Blood pressure in men. of mercury.	Pulse in a unit of time.	Remarks.
1	0	Commenced	104.5	9	Convulsions.
	10		57	9	
	22	Ceased	65		
	59				
	87				
2	0	Commenced	83	9	Convulsions.
	19	Ceased	52	9	
	33		102		
	36		98		
3	3		141	11.5	Poisoned with curare, and artificial respiration kept up.
	6		157	11.5	
	12	Commenced	139	11.5	
	19		99		
	30		112		
	41		100		
	59		108		
	72		88		
4	0	Commenced	43		Spinal cord cut near occiput.
	6		43		
	25		32		
	33		30		
	64		42		
5	0	Commenced	97		Convulsions.
	5	Ceased	76		
	47		126		
	110		119		
6	1		20	8	Spinal cord cut. Aorta compressed.
	25	Commenced	92	7	
	31		95	8	
	33		80	6.5	
	38		75	8	
	61		78	7.5	
	72		20		
					Aorta loosened.
7	1		24	7	Aorta compressed.
	14		107	7	
	21		113	7	
	22	Ceased	105	6.5	

In order to test the facts of Dr. Brunton, I instituted the following experiments:—

Expt. 18.—A very strong terrier, moderately large. 3.40. Inserted tube of cardiometer into femoral artery; pulse 100; blood-pressure 130–175. Mercury constantly rising and falling, but most of the time between 140–160. 3.45. Blood-pressure and pulse as before. Two drops of the nitrite inhaled. No effect visible on cardiometer. 4.4. Injected a drop. 4.7. Blood-pressure nearly as before, but very rarely going above 160. 4.18. Injected between three and four minims. 4.22. Blood-pressure as before; pulse 96. 4.33. No change in blood-pressure. Injected fully ten minims into peritoneal cavity. 4.37. Blood-pressure 140–160; pulse 108; breathing very much affected. 4.47. Blood-pressure mostly 130–140—going down to 120—never above 150. Arterial and venous blood alike. 4.51. Blood-pressure 120–130. 5.10. Individual beats hardly perceptible in cardiometer tube; mercury now standing at 95. Dog was now let off, and was able to walk; next day was all right except as to his leg.

Expt. 19.—A stout young spaniel-cur. 4 P.M. Inserted cardiometer tube in left femoral artery; pulse 150; blood-pressure 125–140; mostly above 130; whilst dog is howling, range from 105 to 165. 4.10. Ten drops nitrite inhaled. 4.12. Blood-pressure 105–130. 4.13. Pulse 164; blood-pressure mostly from 105–120—generally below 120. 4.14. Blood-pressure same. No general symptoms. 4.25. Pulse 168; blood-pressure 120–145; 30 drops inhaled. 4.25½. Blood-pressure 110–120; dog quiet. 4.26½. Blood-pressure 95–130, mostly below 115; pulse 170; dog howling. 4.28. Blood-pressure 95–115. 4.28. Breathing very deep and laboured. Heart's motion hardly perceptible in mercury. No marked general symptom from the amyl, save the change in colour of blood. The thorax seems very full, distended, tympanitic. Pupils natural. 4.49. No marked improvement in colour of the blood. Dog let up, can walk very well.

Expt. 20.—Moderate-sized cur dog. 3.30. Cut the pneumogastrics. 3.45. Inserted cardiometer in carotid. Pulse 180; heart-stroke 3; blood-pressure 130–150. 3.50. Injected five minims into peritoneal cavity. 4.4. Blood-pressure 105–115, going to 120 on violent breathing. Pulse 204; heart-stroke 3. 4.11. Pulse 195. 4.14. Breathing laboured. Blood-pressure mostly 110–120. 4.17. Dog still quiet. Blood-pressure 115–125. Five drops inhaled; the mercury fell almost instantly, but violent efforts at breathing coming on, mercury vibrated between 90–140 during each breathing effort. After a few seconds of quiet, mercury stood at 100. 4.30. 5 gtt. nitrite injected; cardiometer immediately afterwards indicated a blood-pressure 90. Violent, forced breathing now coming on, mercury vibrated between 75 and 130. Heart-stroke 2. 4.44. Quiet; blood-pressure 90–95. 4.45. Very laboured breathing—mercury vibrating between 80–130; 10 gtt. of nitrite were now inhaled, and mercury fell at once to 75–85; violent breathing coming on, mercury followed each effort from 70–120, then stood for a few seconds 110–120, then rapidly fell. 4.50. Dog able to walk.

Expt. 21.—The cord of a large Scotch terrier was cut low down in the neck at 3.30 P.M. A great deal of blood was lost. 3.40. Blood-pressure in carotid near 20. 3.50. Fifteen drops were given by inhalation. The mercury almost immediately fell to zero, beating feebly. On very forcible respirations coming on, it rose, and then remained a little while pretty steadily from 8–12, then fell again to near zero. 3.60. Dog dead.

Experiments 18 and 19 certainly corroborate the assertion of Dr. Brunton that the nitrite of amyl diminishes the blood-pressure, although sometimes increasing the rapidity of the heart's beat. He states that this quickening of the pulse does not take place in rabbits, but that in dogs it is very marked. It was, perhaps, not so pronounced in my experiments as his language would seem to indicate, yet it was very evident. In the first

trial, it was not very apparent until the circulation was profoundly affected, but the increase in rapidity was finally nearly 50 per cent. In the second essay, the gain in rapidity was only about 15 per cent. Experiments 20 and 21 are also in agreement with those of Dr. Brunton, confirming his second and third facts (of my enumeration). Circumstances have prevented my repeating the final experiments of Dr. Brunton, but having found his other facts correct, I think it little to allow that his fourth is also.

Dr. Brunton's facts being correct, is his deduction also? His reasoning leads him to the belief that the chief factor in the reduction of the blood-pressure is expansion of the capillaries. I must content myself with a reference to his paper (*loc. cit.*), for a *résumé* of his arguments. Some of them will be incorporated in this paper, but so intermingled with my own, that it would absorb too much time and space to acknowledge each separately.

The researches of Cyon and Ludwig, Stilling, Roever, and other German physiologists, have demonstrated that there are four ways in which the heart can be influenced.

1. Through the vagi. 2. Through the accelerator nerves, which pass downwards from the brain through the cervical spinal cord, to form one of the roots of the last cervical sympathetic ganglion. 3. By acting on the muscular structure of the heart. 4. Action on the bloodvessels.

That the nitrite does not act in either the first or second ways, is directly proved by experiments already given (Expt. 19 and 20), since division of the nerves did not affect the result.

That the nitrite does not act in the beginning upon the heart itself, is, I think, fairly deducible from the experiment of Dr. B., in which the aorta was compressed. If it did act in such a way, how could compression of the artery affect the result? Moreover, Expt. 19 corroborates this, because the individual heart-beats retained their pristine force long after the general blood-pressure had fallen. For these reasons, I think it must be allowed that nitrite of amyl does not act upon the heart until a considerable point of saturation of the blood and system is reached.

If the nitrite does not reduce the blood-pressure in any other way, it must do it by acting on the capillaries, either directly or through the vasomotor nerves. It would seem, therefore, a fair conclusion that it does so act. Moreover, only in this way can the results of the aortic compression be explained. It is evident that compression of the aorta shuts off a very large portion of the capillary system, and therefore ought to have the effect, if the nitrite acts on the capillaries, that experiments have shown it really does have. There is also some corroborative evidence of this view. Thus the marked flushing of the face that follows the inhalation of the drug in man, and the same thing in the ear of the rabbit, show at least that a portion or portions of the capillary system are affected. It is also

asserted that the local application of the amyl salt to the web of the frog's foot produces a very sensible dilatation of the capillaries, as seen under the microscope. I have not repeated this experiment, partly because I have never had satisfactory results in similar trials with other drugs, and partly because I have not thought the experiment of pre-eminent value. From the nature of the local action of the nitrite, which will be discussed hereafter, dilatation of the capillaries must occur when the undiluted drug comes in contact with the vessels. The question at issue is, does it also do this when the small portion dissolved in the blood penetrates a capillary?

The effect of the almost pure drug on a capillary is at most only a presumptive evidence. I think, however, these minor arguments—*i. e.*, its local action, and the visible enlargement of the capillaries in the face and ear, before alluded to—so strengthen the major, that it must be allowed that one of the first effects of the nitrite taken into the blood is dilatation of the capillaries, and that this dilatation is chiefly owing to a direct action on the vessels. It will be shown directly that the nitrite applied locally is a paralyzer of muscular fibre, and it has been already shown that it exerts a similar, although less powerful, influence when taken internally. When the drug enters the blood, it comes into such immediate and intimate contact with the thin walls of the capillaries, of very necessity passing through them to reach other tissue, that I do not see how it is possible for it to fail to paralyze more or less completely their muscular fibres.

When, however, a considerable amount of the salt has been absorbed, and all the muscular structures are being weakened, I think it very plain that the heart itself must partake in the depression. There comes in then a second element of weakness in the circulation, namely, loss of muscular power in the heart. A reference to Experiment 19 will show that early in the trial, although there was a marked decrease of arterial pressure, yet the individual heart-stroke raised the mercury just as high as before the inhalation; whereas later the propulsive power of the individual stroke was plainly reduced one-third.

In conclusion, then, I think it must be allowed—1. Nitrite of amyl reduces the blood-pressure when taken into the system by any route. 2. This reduction is owing in the first place to a paralysis of the capillaries, and finally also to a direct action on the muscular structure of the heart, and is practically independent of the central nervous system.

In accordance with the plan of this essay, a study of the local action of the nitrite of amyl is next in order. In this there is a field as yet untouched, no writer, to my knowledge at least, having said aught on the subject.

Early in my experimentation I perceived that the nitrite does not act at all as an irritant. I have now given it by inhalation, and injected it into almost every portion of the body of the animal, without ever seeing

the slightest indications of its producing pain or irritation. From this the inference is obvious, that it exerts but little local influence. Experiment 15 was the first, I think, that showed me the falsity of this inference. To my surprise, the leg of the frog in a very short time was stricken with complete paralysis after the injection into it of the nitrite. Starting from this, the following experiments were undertaken to determine, if possible, the exact nature of the local action of the drug. It may be further premised, before detailing the trials, that very evidently the nitrite is not an escharotic in the ordinary sense of the term, that the past series of experiments show that it does not, like sulphuric acid, destroy tissues by taking from them certain ingredients, nor yet, like arsenic, does it so act on their vitality as to produce rapidly a distinct mass of dead tissue surrounded by a living inflamed border.

The experiments are as follows :—

Expt. 22.—12.20. Injected into left thigh of a moderate-sized frog a small amount of the nitrite. 12.30. Frog quiet on his back; acetic acid on left foot caused immediate active movements. 12.34. Still moves left leg. 12.40. No power of motion of left leg; acetic acid on foot elicits no response; on right foot gives rise to immediate general active movements; left leg extended, not rigid. 12.45. Muscles of left thigh responding to galvanism actively. 12.50. No response to galvanization of left crural nerve, except to a strong current; under stimulus of galvanism, frog struggled very much; injected more nitrite of amyl into left thigh. 1. Muscles of left thigh still respond to galvanism. 1.10. Strong galvanism of left crural nerve high up causes no motion in muscles supplied, although giving rise to active general movements, as though frog were trying to get away.

Expt. 23.—2.35. Cut cord of a small frog, high up; exposed crural nerves; then dropped on the left nitrite of amyl, which did not remain in contact more than ten seconds. 2.30. A weak galvanic current applied to left crural nerve, above point where nitrite of amyl rested, causes very slight movements of leg; a stronger current, quite active ones. The weak current to right crural nerve causes almost as much action as the stronger did to the left. 2.35. Put nitrite on left crural nerve for about half a minute. 2.37. Galvanic current applied to spine produces very powerful contractions of all the muscles of the body, except those of left leg; these do act, but not sufficiently to move the foot.

Expt. 24.—A small frog; tied very tightly around left thigh a ligature close to the body. 2.40. Injected some two and a half minims into left thigh and leg. 2.50. No power over left leg; no general symptoms of poisoning by the nitrite; a galvanic current, weak but strong enough to make itself felt in other parts of body, applied in the length of leg, produces no movements; a strong current induces decided muscular contractions. 3.7. Strong current only causes very slight movement in left leg. 3.15. Exposed individual muscles in left leg; strong currents produce feeble movements of muscles; weak currents show no action. The same is true of the crural nerve. Replaced nerve, and dropped on it nitrite. 3.25. None but the most powerful currents cause any response when applied to crural nerve or thigh muscles, and by these not enough force is excited to move even the toes, nothing but the faintest twitchings of the muscles; no constitutional symptoms manifest.

The object of the experiments just detailed was the testing of the local effect of the amyl salt upon the functional activity of the nerves and voluntary muscles. In the first of the series the nitrite destroyed the ordinary conducting power of the nerve with which it was in contact, before the

general system was very much affected, although the circulation was not interfered with. There was such a total destruction of the power of transmission, that powerful galvanic stimulation failed to awaken any response in the muscles supplied by the nerve. The other experiments were somewhat more specific. In Expt. 23 the nerve was isolated, and the amyl dropped on it. The result was a rapid loss of functional power, which was finally almost completely destroyed, the strongest galvanic stimulation of the nerve only exciting feeble twitchings of the muscles. The final experiment tested the effect of the nitrite both on the nerves and voluntary muscles, and I think shows that they are similarly affected, each suffering a gradual loss of functional power, which at last becomes almost extinct. It is an interesting point to determine whether the nitrite exerts a similar influence on the muscles of organic life, and in order to test this the following experiments were instituted:—

Expt. 25.—Opened the sternum of a small frog so as to show the heart; in doing this, I inadvertently opened abdomen so that the liver protruded; there was also a great deal of hemorrhage. 3.3. Dropped some of the nitrite out of hypodermic syringe on the heart. 3.5. Dropped some more of the amyl salt as above. 3.6. Heart beating very slowly. 3.10. Heart-beat practically stopped, a "white spot" of considerable size persistent at the apex. The systole very feeble, almost entirely auricular; frog seems pretty lively; gets over on his belly very quickly when laid on back. 3.13. Heart apparently acting a little, but never anything like emptying itself. Frog still able to get off his belly readily. Let fall two or three more drops on heart. 3.15. Respiration stopped rather suddenly. 3.20. Frog has just got off his back. Heart's action confined to the auricles. Ventricles white. 3.40. Has been making efforts at jumping.

Expt. 26.—Moderate-sized frog. 9.50. Dropped upon apex of heart, from a Wood's syringe, a little of the nitrite. Action of the heart immediately slowed. 9.59. Heart no longer beating. Pricking it awakens no response. 10.5. Frog still breathing occasionally, every now and then seized with a sudden, general, electric-like motion driving him forward. The movements are those of jumping, and sometimes the frog progresses half his length.

Expt. 27.—11.20. A frog's heart treated as before. Respiration active. Heart stopped. Acetic acid on leg caused active movements. Frog turned over from his back to belly; held his head up and looked quite bright. 11.25. Transfixion of ventricles causes a number of active auricular beats; the ventricles remaining passive. Respiration active. 12. Acetic acid on eye still causes reflex movements of head. Ventricles of heart white, bloodless; auricles distended with black blood.

These experiments prove that the nitrite of amyl applied locally to the heart, a muscle of organic life, acts in the same manner as upon the nerves and voluntary muscles.

In conclusion, then, I think the two series of trials show, in regard to the local action of the amyl salt: First, its action is somewhat gradual in its character, growing more and more profound as the time of contact lengthens. Second, at no period are there the slightest indications of exaltation of function, but at all times a steadily progressive lowering of the vital actions. Third, at no time are there any signs of irritation, such as pain or red-

ness. Fourth, all tissues, at least all of the more highly vitalized, are similarly affected.

Still another proposition, although not actually proven by any experiments yet detailed, may be added to the above. Fifth. If contact be not too transient, absolute death of the part is induced. Much that has been already given almost necessitates this as a corollary, but the following experiments may be looked upon as the actual proof:—

Expt. 28.—Jan. 6. Pigeon received $2\frac{1}{2}$ minims of the nitrite in breast, from whose action it apparently entirely recovers. Jan. 9. Killed with the nitrite; at point of previous injection is a largish spot or mass, in which the muscular structure is much softened, tearing readily with handle of scalpel into fibrous bundles which easily break. The colour of this mass is a dark grayish, instead of deep red, the whole looking somewhat like stringy boiled corn-beef. On Jan. 7 no soreness could be detected in breast.

Expt. 29.—Dec. 28. Adult pigeon. 8.24. Injected in left thigh 2 gtt. of nitrite of amyl. 8.35. Is unable to walk; left leg appears to be useless. 8.37. Now standing on right leg; left leg with its claws folded together and foot bent upwards so that the top of the foot rests on the floor. 8.56. Seems all right, except in regard to the left leg, which is entirely powerless. Dec. 29. Left thigh enormously swollen. The foot is drawn up, fully flexed, the toes all folded upward together, but not forcibly; when straightened, they return to their former state. Dec. 30. Pigeon found dead in the box this morning. Autopsy: Thigh tissues exceedingly softened, infiltrated with a dark grumous fluid, evidently altered exuded blood.

The ultimate method of action of drugs, the why and the how they influence the living cells, is in most instances utterly beyond our ken, and perhaps always will be. In the present case, however, there are some reasons for suspecting that it may be possible to make one step in this direction, to acquire a knowledge how one medicine acts. It has been stated by authorities that the nitrite of amyl has the power of checking oxidation in the air at ordinary temperatures, and one of the most obvious effects of it inside the body is the prevention of the change of colour of the blood in the lungs.

These two facts, if facts they be, suggest at once that the amyl salt acts upon the various tissues by checking oxidation, or, in other words, the chemical changes necessary to functional activity. In studying this, the first thing to be done is of course to determine whether the above assertions are facts indeed. For this purpose the following experiments were instituted:—

Expt. 30.—A piece of stick phosphorus of considerable size was taken and its surfaces freshened by the knife. It was then suspended in a small bottle, and in the room (65° F.) glowed very distinctly in the dark, and soon filled the phial with white fumes. The latter were now washed out, the phosphorus having been first removed, and five drops of the nitrite were then put in together with the phosphorus. The bottle was shaken so as to become filled with the amyl vapour, and it was found that the phosphorus no longer glowed or emitted white fumes. After standing some time, the bottle was placed in water 112° F., and in a little while the white fumes made their appearance. The process of washing, as above, was repeated, but before replacing the phosphorus, ten drops of the nitrite were put into the bottle. The latter still stood in the hot water, but the phosphorus did not glow or give off phosphoric acid vapour. When the

phosphorus was raised out of the bottle into the air, it instantly began to give off dense white fumes; but on its being put back, the development of these immediately ceased. It put one in mind of plunging a lighted taper into a carbonic acid bottle. The phial was now opened, and washed out so as to get rid of the amyllic vapour. The phosphorus being replaced, the phial was stood in the hot water a few minutes, and then the combustible was found to glow in the dark like a live coal. Five drops of the nitrite shaken in the bottle instantly extinguished it.

Expt. 32.—Venous blood was taken from the jugular vein of a cat nearly dead from suffocation. To this intensely dark blood a little carbonate of soda was added to preserve its fluidity, and then it was violently shaken in a large bottle. It immediately became light red, but not so scarlet as pure arterial blood; on the addition of a solution of the permanganate of potash, it became very bright red. Another portion of the same blood was now taken and treated as before with an alkali, after the addition of a little of the nitrite. On shaking, the blood changed its colour to the familiar brownish tint, but no amount of agitation would cause it to approach in the least towards the arterial hue, neither had the solution of permanganate of potash any more power. The cat was now hanged until dead. The body was opened immediately, and the black blood drawn from the large veins. With this the experiments just detailed were several times repeated, with similar results. After the addition of the nitrite of amyl, the blood altogether refused to become of a brighter colour.

Expt. 32.—A dog was killed with the nitrite. Blood was now drawn from the jugular vein, and some from the aorta; on being placed side by side, a slight difference in hue was detectable, the venous blood being somewhat darker. An alkali was now added to the dark blood, and the hue brightened slightly, but so little as to be scarcely perceptible. No amount of shaking in the air would affect its colour.

The first of these experiments seems to settle the point towards which it was directed, so that it is safe to consider the premise established that the nitrite of amyl checks oxidation outside of the body.

How far change of colour is a test of oxidation of the blood, is, unfortunately, not a settled question. That the change of hue from venous to arterial blood is owing to oxidation, is of course long since proven, but then it is well known that the addition of an alkali to freshly drawn dark blood will brighten its colour very materially, although not to the arterial point. This change is scarcely due to chemical alterations, but probably to a mechanical change of form of the blood-corpuscles, consequent upon the increased density of the serum, and it is therefore conceivable that a substance may prevent the change of colour of blood in the lungs without prevention of oxidation. It is, however, merely conceivable, and, I think, such influence on the blood coloration is an *a priori* reason for supposing alteration of oxidizing process, and throws the burden of proof upon those who would deny the latter.

The last two experiments show that the influence of the nitrite upon the blood-colour is not a secondary one, but is primary and independent of any action upon the nervous or other tissues.

The second premise, then, namely, that the inhalation of the nitrite checks oxidation of the blood, is a probable, but not a positive truth.

The blood being a living tissue, subject to the various laws of life, it

would seem only a logical deduction from the above premises that the nitrite of amyl, by virtue of its peculiar chemical power, checks oxidation everywhere when taken into the system, or, in other words, arrests tissue metamorphosis. As, however, the second premise is only a very probable, but not actually demonstrated fact, the conclusion must lie under the same shade of doubt.

Is there any way of removing this doubt and proving beyond all peradventure that the drug has the action spoken of, when inhaled? I think so. There are two measures of tissue changes, which separately might possibly not be convincing to all, but which together are capable of deciding positively the question, namely: Temperature, and the elimination of carbonic acid by the lungs.

These points I shall now discuss minutely, taking them in order, and commencing each consideration by details of experiment.

Expt. 33.—A large female cat. 3.40. Thermometer introduced through abdominal walls indicated $103\frac{3}{4}^{\circ}$ F. 3.43. 12 gtt. of the nitrite were put on inhaler, and it placed over cat's face. 3.48. Temp. $101\frac{1}{2}^{\circ}$.

Expt. 34.—Jan. 6. Adult pigeon. 4.25. Temp. $107\frac{1}{2}^{\circ}$. 4.26. Injected into breast $2\frac{1}{2}$ minims of the nitrite. 4.36. Not as yet materially affected; temp. 106° . 5. Temp. 104° ; no symptoms. save quietness. 5.40. Temp. 102° ; no symptoms manifested. 6.15. Temp. $103\frac{1}{2}^{\circ}$. Jan. 7. Seems perfectly well; no soreness of breast manifested.

Expt. 35.—Jan. 9. Same pigeon as in last experiment. 12 P.M. Temp. when brought out of yard, $109\frac{1}{2}^{\circ}$. 12.20. Injected about 5 minims. 12.28. Walks very staggeringly, with head down; temp. 108° . 12.40. Perfectly conscious, but unable fairly to walk. 12.49. Conscious, quiet, breathing very deeply; temp. 103° . 1.5. Temp. 101° . 1.25. Seems more lively, but not able to walk; temp. 97° . 2.10. Temp. 95° ; just had a sudden, very short, violent convulsion, in which he died.

Expt. 36.—Adult pigeon. Temp. in rectum $108\frac{1}{4}^{\circ}$. 4 drops of nitrite given by inhalation. 1 min. Temp. $108\frac{1}{4}^{\circ}$. 5 min. Temp. $106\frac{3}{4}^{\circ}$; perfectly conscious, but respiration very much disturbed. 6 min. Temp. 106° . 7 min. Temp. 107 . 9 min. 5 drops inhaled. 10 min. Temp. $107\frac{1}{2}^{\circ}$. 14 min. Temp. $106\frac{1}{2}^{\circ}$; pigeon in violent convulsions. 15 min. Dead.

Expt. 37.—A young rabbit. Temp. 104° . 4.45. Injected into cellular tissue 5 minims of the nitrite. 4.50. Temp. 102° . 5.15. Temp. $99\frac{3}{4}^{\circ}$. 5.35. Temp. 98° ; seems more lively, struggling and fighting when temperature is taken. 5.45. Temp. $97\frac{3}{4}^{\circ}$. 5.55. Injected $2\frac{1}{2}$ minims into cellular tissue. 6.5. Temp. $97\frac{1}{2}^{\circ}$. 6.25. Temp. 98° ; untied rabbit, he seems all right. 7.20. Temp. 99° . 7.45. Temp. 100.

Expt. 38.—Adult pigeon. Jan. 5, 3 P.M. Temp. $107\frac{3}{4}^{\circ}$; injected $2\frac{1}{2}$ minims. 3.27. Injected about 5 minims. 3.30. Making violent but fruitless efforts at vomiting. 3.35. Again retching; seems decidedly weak. 3.37. Perfectly conscious; unable to stand; temp. 105° . 3.43. Quiet; temp. $104\frac{1}{4}^{\circ}$. 3.48. When laid on back, remains there quietly; temp. 104° . 3.49. Apparently reviving some; holds head up more. 3.53. Temp. $103\frac{1}{2}^{\circ}$. 4.3. Temp. $102\frac{1}{2}^{\circ}$. 4.10. Temp. $101\frac{3}{4}^{\circ}$. 4.18. Temp. $101\frac{1}{2}^{\circ}$. 4.26. Temp. 101° ; has been lying perfectly quiet on back for half an hour; eyes closed; muscular motion abolished, save that of the deep, laboured, frequent breathing. 4.35. Temp. $100\frac{1}{2}^{\circ}$; reviving; struggled against use of thermometer. 4.37. Quiet on back; put him out in the yard. 4.42. The cold appears to have revived pigeon; he is now walking in the yard; still unable, however, to raise his body from the ground. 4.43. Temp. 100° ; returned to warm room. 5.5. Temp. $99\frac{3}{4}^{\circ}$; able to walk staggeringly. 7 P.M. Seems all

right; temp. $102\frac{3}{4}^{\circ}$. Jan. 6, 10 A.M. Seems lively, eating. 7 P.M. Found pigeon dead in box.

Remarks.—Death not owing directly to nitrite. Pigeon had been used before thermometrically, and the rectum was small, while thermometer was rather large, and had to be slightly forced in. When present experiment was commenced it was noticed that the vent was swollen, and for a space an inch and a half in diameter feathers had fallen out. Moreover, the nitrite was injected into the peritoneal cavity. At autopsy, abdominal cavity was partly filled with a fetid, dark, purulent liquid, and some blood. How much was due to local action of nitrite I do not know.

Expt. 39.—A young rabbit. 4.30. Temp. in rectum 102° . 4.34. Injected eight drops. 4.40. Temp. $100\frac{3}{4}^{\circ}$. 4.45. Temp. $101\frac{1}{2}^{\circ}$; injected twelve drops. 4.48. Breathing hurried, panting; temp. $99\frac{3}{4}^{\circ}$. 4.54. Temp. 99° . 5. Temp. $97\frac{3}{4}^{\circ}$. 5.4. Temp. $97\frac{1}{2}^{\circ}$. 5.9. Temp. 97° . 5.10. Dead.

Expt. 40.—A small adult dog. 10 A.M. Cut the cervical pneumogastrics. 4.20 P.M. Temp. $99\frac{1}{2}^{\circ}$ F.; bulb of the thermometer introduced into peritoneal cavity. 4.22. Injected 12 gtt. nitrite of amyl. 4.28. Temp. 99° ; injected 12 gtt. additional. 4.34. Injected 20 gtt. 4.36. Temp. $99\frac{1}{2}^{\circ}$; very violent respiratory struggles. 4.42. Temp. 99° ; put 12 gtt. on inhaler and gave to dog. 4.44. Temp. $98\frac{1}{2}^{\circ}$. 4.45. 12 gtt. put on inhaler, and inhalation continued. 4.46. Temp. 98° ; inhaler taken away from dog, which was quiet and scarcely breathing. 4.47. Temp. 98° ; dog revived. 4.48. 5 gtt. on inhaler. 4.50. Lying perfectly quiet, with slow, regular breathing; inhaler taken off his nose. 4.52. Temp. $97\frac{1}{2}^{\circ}$; inhaler replaced. 4.53. Temp. 97° ; quiet, some tendency to opisthotonos. 4.54. Temp. 97° ; gtt. 5 on inhaler. 4.55. Temp. $96\frac{1}{2}^{\circ}$; very quiet; took off inhaler. 4.57. Temp. $96\frac{1}{4}^{\circ}$. 4.58. Temp. 96° . 4.60. Gtt. 5 on inhaler. 5.1. Temp. $95\frac{1}{2}^{\circ}$; apparently dying; inhaler removed. 5.3. Temp. 95° . 5.8. Dead.

These experiments appear to be sufficient to prove that the nitrite of amyl has a very extraordinary power of lowering the temperature of warm-blooded animals. Where the nitrite is administered rapidly, as by inhalation, this effect is not so pronounced as when it is taken more slowly into the system. Thus, in Experiment 36, although the pigeon was killed by the drug, yet the reduction of temperature scarcely amounted to two degrees. If, as will be shown in the course of the argument, the nitrite acts simply by checking the generation of heat, the reason of this is obvious. The body of the pigeon is protected by its thick coating of feathers, so that although there may be a partial arrest of the heat-making processes, yet there can be in a few minutes no very great change of temperature, because cooling takes place slowly. In the cat, whose outer coat is not quite so thick, the cooling takes place at a somewhat faster rate. Thus, in Experiment 33, over two degrees were lost in five minutes, although the inhalation was not pushed so as to endanger life.

The more interesting and satisfactory experiments, however, are those in which the nitrite was administered hypodermically. This class embraces Experiments 34, 35, 37, 38, 39, 40. These again may be divided into two sets, those in which a lethal dose or doses was given, and those in which the animal recovered, the first set embracing Experiments 35, 39, 40; the second, 34, 37, 38. In Experiment 35 death was delayed for nearly two hours after the injection of the poison, and there was a little before the last an abatement in the general symptoms, so that I thought the pigeon

would recover. With a temperature reduced some thirteen degrees below the standard, the bird was yet thoroughly conscious. In Experiment 39 the temperature was reduced in a rabbit five degrees.

Although the fact has not been actually demonstrated yet, I think it may be accepted as a corollary to the arguments and experiments of my paper "On the Influence of Section of the Pneumogastrics upon the Action of Purgatives and Emetics,"¹ that after division of the vagi nerves there is a lowering of the animal temperature. Yet in Experiment 36 the exhibition of the nitrite reduced some $5\frac{1}{2}^{\circ}$ the temperature of a dog whose vagi had been cut six hours previously.

In Experiment 34 the temperature of the pigeon was reduced some $5\frac{1}{2}^{\circ}$ without the production of general symptoms of any import. In this case the lowest point appears to have been reached seventy-five minutes after the exhibition of the drug, the temperature rising, however, only $1\frac{1}{2}^{\circ}$ in the next half hour.

Experiments 37 and 38 are very interesting, as showing that the temperature continues to fall after the general symptoms commence to abate, or at least that the rise in temperature does not occur until some time after the general symptoms begin to subside. In each case the first sign of returning life was struggling against the use of the thermometer. In the first instance the mercury in the thermometer fell $\frac{1}{2}^{\circ}$ after this, and it was not until an hour had elapsed that it recovered this fall, and at that time the rabbit ran about freely, although its temperature was 6° below normal. In the other case the heat of the bird fell $\frac{3}{4}^{\circ}$ after the first manifestation of recovery, and forty minutes afterwards had not regained this, although the pigeon was able to walk. Two hours after this the temperature had only mounted to $102\frac{3}{4}^{\circ}$, 5° below normal. This experiment is also very interesting from the fact that the bird survived a reduction in temperature of 8° Fahr.

As the result of this series of experiments, the following conclusions are, I think, warranted: First. Nitrite of amyl, exhibited so as not to kill too quickly, lowers animal temperature very remarkably. Second. In non-fatal cases, not only is the subsequent rise of temperature very slow, but the lowest point reached is generally not until some time after the general symptoms commence to subside.

It is very difficult to perceive how such a fall of temperature could be produced save by the checking of oxidation of the tissues, especially in connection with the last noted fact. Moreover, direct proof of the strongest kind that it is so caused is forthcoming.

Since the earlier days of Sir Benjamin Brodie it has been known that under certain circumstances a great rise of animal temperature follows section of the cervical spinal cord. Now what is the cause of these symptoms?

¹ American Journal of the Medical Sciences, July, 1870, page 75.

The division of the cervical cord, as every one knows, produces universal relaxation of the small vessels below the point of division, from paralysis of the vaso-motor nerves. Is this relaxation of the vessels, and consequent general congestion, in itself enough to account for the subsequent symptoms? I think not. It is very evident that no more blood passes under such circumstances through any one part than before the section; for the action of the heart is very greatly reduced, and the general blood-pressure immensely so. The blood-current really flows everywhere more slowly, and less blood is of course offered in any given time to any one part than before the division. I think, then, we must look elsewhere for a cause of the rise of temperature. The elaborate discussion of such a point would be outside of the scope of the present paper, but many physiologists at present believe that there is somewhere at the base of the brain a nervous centre which exerts an influence upon the nutritive acts, independent of the vaso-motor nerves. Supposing such a centre to exist, what would be the probable results of division of the cervical cord? Evidently a check to the normal nutritive processes, and a general loss of vitality in the tissues, or, in other words, loss of power to resist ordinary chemical laws.

What are the facts in regard to the alteration of the animal temperature after division of the cord? They may be summed up as follows:—

1. Section of the cervical cord is followed by an immediate lowering of the temperature.

2. If the animal be kept in a temperature of not over 65° or 70° , and be not wrapped up, no rise of temperature occurs.

3. If the animal be laid in a hot place, or be so protected that no heat can escape, and consequently an accumulation occurs, a rise of temperature soon becomes manifest, the rapidity of its manifestation bearing a direct relation to the heat of the place.

4. This rise in temperature is soon followed and accompanied by a most offensive putrefactive odour.

5. Chemical changes go on so rapidly after death, that the high temperature is in a remarkable degree maintained, and decomposition will be found to be far advanced in the course of two or three hours.

Granting for the moment the truth of these assertions, what are the natural deductions therefrom? Evidently that at first there is a lessened activity in tissue change, and that if the animal be left to itself, this diminution of normal action continues generally until death; but that if the temperature be in any way elevated a few degrees, the ordinary chemical laws becoming more active as the temperature rises, finally assert themselves, and before the brain and respiratory centres are overwhelmed, chemical changes are set up in the body, which partake of the nature of putrefaction. It is evident that the widely-dilated capillaries and the moving blood, carrying everywhere its load of active oxygen, favour extraordinarily such changes, and that the reason the temperature falls at all

after death is, that the circulation not continuing, the inner tissues are to a great extent cut off from a supply of the needful gas.

To sum up, then, the rise of temperature after division of the cervical cord depends upon rapid chemical changes provoked by a high heat and maintained by the free supply of oxygen. I think no possible fallacy can be found in the above argument, except it be in the premises, the facts upon which the argument rests. The proofs of these are to be found in the following experiments:—

Expt. 41.—A stout cat. Nov. 11. Temperature, taken whilst in open air, and cat was under influence of ether, $98\frac{1}{2}^{\circ}$. 10 A.M. Cord cut between 7th and 8th vertebræ. 10.10. Temp. $96\frac{1}{2}^{\circ}$; now taken to a warm room. 11. Temp. $97\frac{1}{4}^{\circ}$; temp. of room 78° . 11.3. Temp. 99° ; temp. of room 80° . 12. Temp. $99\frac{3}{8}^{\circ}$; temp. of room 80° . 12.30. Temp. $100\frac{1}{2}^{\circ}$; temp. of room 84° . 1.30. Temp. $100\frac{1}{2}^{\circ}$; temp. of room 82° . 2. Temp. 100° ; temp. of room 80° . 3. Temp. $99\frac{3}{4}^{\circ}$; temp. of room 78° . 4. Temp. 99° ; temp. of room 70° . 5. Temp. 98° ; temp. of room 62° . 8. Temp. 99° ; temp. of room about 60° . 10 P.M. Temp. 100° ; temp. of room about 70° . Nov. 12. 10 A.M. During night was exposed to a cool temperature. Temp. $88\frac{1}{4}^{\circ}$; temp. of room 56° . 10.45. Temp. 89° ; temp. of room 58° . 1.15. Temp. $90\frac{1}{4}^{\circ}$; temp. of room 64° . 3. Temp. 90° ; temp. of room 58° . Cat dead.

Expt. 42.—A stout female cat. Cord cut 12.48. Temp. before section 101° . 1.30. Temp. $99\frac{1}{2}^{\circ}$; temp. of room 74° . 2.30. Temp. $99\frac{1}{2}^{\circ}$; temp. of room 76° . 3.15. Temp. 100° ; temp. of room 70° . 4.30. Temp. 99° ; temp. of room 60° . 5.30. Temp. 97° . 8.30. Temp. 97° ; temp. of room 54° . Cat died during the night.

Expt. 43.—A young dog. Nov. 21. Temperature 102° . 10.47 A.M. Cut the cord, and immediately removed dog to warm room, and very carefully wrapped him up in cotton. 11.10. Temp. $94\frac{1}{2}^{\circ}$; temp. of room 56° . Pupils pin-points. 12.10. Temp. $90\frac{1}{2}^{\circ}$; temp. of room 58° . 1. Temp. 90° ; temp. of room 59° . 3. Temp. $89\frac{1}{2}^{\circ}$; temp. of room 56° . Pupils no longer pin-points, although much contracted. 4.30. Temp. 88° ; temp. of room 56° . 5. Temp. $88\frac{1}{2}^{\circ}$; temp. of room 58° . 7. Temp. 90° ; temp. of room 78° . 9.30. Temp. $94\frac{1}{2}^{\circ}$; temp. of room 70° . 10.30. Temp. $95\frac{1}{2}^{\circ}$. 12 P.M. Temp. $97\frac{1}{4}^{\circ}$. Nov. 22. 7.30 A.M. Temp. $105\frac{1}{2}^{\circ}$. Room over 70° . Dog breathing regularly. 11.40. Temp. 106° . Twelve drops of nitrite of amyl were now placed in inhaler, and placed over dog's nose; he died almost instantly. 12.10. Temp. 105° ; room about 75° . 1. Temp. 103° . 3.25. Temp. 94° . He now became so very offensive, he was thrown out into the cold.

Expt. 44.—9.30. Cut the spinal cord of an adult cat between 6th and 7th vertebræ. 9.32. Temp. $97\frac{1}{2}^{\circ}$; cat taken and laid over grating of flue in hot-house. 10.15. Temp. 95° . 11. Temp. 97° . 12. Temp. 100° . 2 P.M. Temp. 108° . 3. Temp. 110° ; the temperature of the air from the flue is now 102° , and doubtless has been so for last two hours, and at no time below 90° . 3.4. Cat dead; temperature immediately after death, in abdominal cavity, 111° . Before death the body exhaled a very strong putrefactive odour, drawing the blue bottle flies out of their winter hiding-places, and when opened, directly after death, the smell was scarcely supportable.

Expt. 45.—An adult cat. Dec. 29. 3.10. Cut cord low down in the neck. 3.30. Temp. 98° ; cat was laid over the flue of green-house. 4.30. Temp. 100° ; only a moderate fire. 5. Temp. 103° . 10 P.M. Still alive; odorous. Dec. 30. 9 A.M. Cat died in the night; whole house filled with the stench; body very far advanced in putrefaction. The smell in hot-house was entirely unbearable, only dissipated by a free and prolonged airing.

Expt. 46.—Adult pigeon. 10.30. Cut cord two-thirds through, between last cervical and first dorsal vertebræ, a very few moments since. Temp. now $96\frac{1}{2}^{\circ}$.

(Temperature unfortunately not taken before operation, but in another similar pigeon, kept in same cage, it is 108° .) 10.30. Temp. $106\frac{1}{2}^{\circ}$. 12. Temp. 105° . 3. Temp. 107° . 4. Temp. 109° . 4.30. Temp. 110° . 5. Temp. 111° . 5.30. Pigeon dead; was wrapped up in cotton in a room somewhere about 70° temperature. 6.20. Temp. 102° . 7.10. Temp. 96° .

The above series of experiments, I think, prove the truth of my assertions. Without going into a more detailed discussion of what I think is self-evident, I would simply point out that assertion No. 1 is proven by nearly all the experiments; that assertion No. 2 is demonstrated by Experiment 41, and probably 42, although in the latter the animal was not watched to the very time of death, and therefore the evidence is not absolute; that assertion No. 3 is established by Experiments 43, 44, 45; that assertion No. 4 rests upon Experiments 44 and 45; and, finally, that assertion No. 5 is proven by Experiments 43, 45, and 46.

I think, therefore, that the conclusion previously arrived at must be considered as proven, and it follows, of necessity, that any substance which prevents this rise in temperature does so by checking oxidation, especially if it also prevents rapid decomposition after death. To test whether the nitrite does this, the following experiments were instituted:—

Expt. 47.—A female cat. Dec. 20. The spinal cord was cut, between 5th and 6th vertebræ, at 9.45 A.M. 10. Temp. $101\frac{1}{2}^{\circ}$; removed to hot-house and put over flue. 10.15. Temp. 102° . 10.45. Temp. 102° ; six minims of the nitrite were now thrown into the cellular tissue. 11.15. Temp. 102° . 11.25. Injected five minims additional. 11.30. Temp. 102° . 11.45. Temp. $101\frac{1}{2}^{\circ}$. 12. Cat dead; temperature of the air from the flue now 105° ; there can be little doubt but what it has been much the same for the last two hours. 6 P.M. Cat has been lying on grating ever since; no smell as yet comes from the body; allowed it to remain where it has been. 10 P.M. There is as yet no odour from the body. Dec. 21, 9 A.M. There is now a considerable odour, but not enough to cause the house generally to be offensive.

Expt. 48.—A large male cat. 10.15. Divided the cord, between 6th and 7th vertebræ. 10.30. Temp. 103° ; cat immediately removed to a hot-house, and placed over the flue. 11.30. Temp. 104° . 12. Temp. 101° . 12.50. Temp. 98° ; was now placed in contact with a pipe containing water at a temperature of 125° F.; violent priapism. 2.30. Temp. 99° . 3. Temp. 100° . 4. Temp. $103\frac{1}{2}^{\circ}$. 4.10. Injected three minims of the nitrite of amyl hypodermically. 4.30. Temp. 102° . 4.45. Temp. $102\frac{1}{2}^{\circ}$. 4.50. Injected four minims of the nitrite into cellular tissue; a stream of air at about 90° was now rushing through grating, and the cat was replaced. 4.57. Temp. 101° . 5.10. Temp. 102° ; air of flue 98° . 5.14. Injected five minims of amyl salt. 5.38. Temp. $102\frac{1}{2}^{\circ}$; temperature of air-current under and around him 106° . 5.50. Temp. 102° ; priapism continues. The cat was now taken and placed where the temperature was 60° . 6.10. Temp. 101° . Injected five minims. 6.20. Temp. 100° . 6.30. Temp. 99° . 6.40. Cat dead. The cat was let lie until 10 P.M.; there was then no offensive odour.

These experiments must be compared with Experiments 44 and 45, with which they are exactly parallel, save only in the use of the nitrite. They certainly show that the nitrite of amyl has the power of checking both the rise in temperature and the rapid putrefaction after death, and consequently of checking the oxidation of the tissues, whence it follows, from what has gone before, that in the healthy body it does check, to a very great degree, tissue metamorphosis.

I think, therefore, without going further, I have actually demonstrated the latter fact; but if it be so, there ought to be a lessened excretion of carbonic acid from the lungs after the use of the drug. If there be such lessened excretion, it shows that my chain of experimentation and deduction has brought a true result. To test this, then, the following experiment was instituted:—

Expt. 49.—A large adult dog. Dec. 23, 1870. 3 30. Inserted in the trachea a tube containing a valve which forced the air to pass straight onwards when expired, but allowed inspired air to come through a lateral opening. Three Wolfe's bottles had been previously connected in the usual way for washing gases, and had been filled to a certain height with freshly prepared lime-water. The first bottle was now connected with the tube through which all the air the dog breathed was necessarily passing. In this way the expired air was forced to pass through the three bottles, and, bubbling up freely from the liquid in the last, passed out through a tube. In $2\frac{1}{2}$ minutes there was a slight appearance of haziness in the third bottle. In $3\frac{1}{2}$ minutes, very decided change in the lime-water in the last bottle. The air as it now passed out through the exit-tube of the latter was allowed to bubble through three drachms of fresh lime-water; in 10 seconds this was quite milky. 3.47. Injected ten minims of the nitrite into the abdomen. 4. Connected breathing-tube again with Wolfe's bottles, which contained a fresh charge, the same size as before. At the end of $3\frac{1}{2}$ minutes the exit-tube of the third bottle was placed at the bottom of three drachms of lime-water, as before. It took 50 seconds to induce very slight opalescence. 4.20. The bottles having been thoroughly cleansed and recharged, were again connected with breathing-tube. The animal was breathing very deeply and rather slowly, but had not the power to force the gas freely through the bottles; a little judicious aid by external pressure during latter part of expiration remedied this, and as much air passed through as in either the other experiments. It required $5\frac{1}{2}$ minutes for the lime-water in third jar to become milky. At the end of that time the air passing out of exit-tube was forced to bubble through three drachms of lime-water; it required some 40 minutes to produce opalescence.

The object of this experiment, which was repeated with similar result on a rabbit, was, of course, not to measure absolute but relative quantities, and it shows very plainly a marked diminution in the amount of carbonic acid exhaled after the administration of the nitrite.

The result previously arrived at required that the nitrite of amyl should lessen the excretion of carbonic acid, and as it does so, it seems to be fully demonstrated that the nitrite in the system arrests tissue metamorphoses, and that its action in doing this is a purely chemical one.

This being so, does it follow that it is simply in this method that the nitrite acts; that all the peculiar symptoms are the results of its chemical action? I think not; it is very possible that it may exert at the same time a chemical and a vital influence. What experiment or experiments are capable of settling this question, I cannot conceive. There appear to be some reasons for believing that much of its action may be due to its chemical power. Such an arrest of tissue metamorphosis would, I think, necessarily involve a lessening of functional activity throughout the system, and this is just what takes place when the drug is exhibited. Moreover, the peculiar local effects of the nitrite singularly agree with this

view. When applied absolutely unadulterated, it does not act as a quick, destructive poison. There is a gradual loss of functional activity, the rapidity of the loss depending upon the strength of the application. If the time of contact be not too long, perfect recovery may take place; but if it be protracted beyond a certain period, permanent death results. No signs of irritation are produced. It is very evident how this is just what would be expected of a poison exerting no influence but a catalytic prevention of tissue metamorphoses. As these changes lessened, functional activity would die away; and yet, if the dormancy of chemical action continued not too long, the part would awake again to life.

The organization and function of the muscle is so much less complicated and more robust than that of the nerve, that it is very conceivable, indeed a seeming necessity, that any drug acting by checking oxidation must, when taken into the system, affect more profoundly the latter than the former. But is it conceivable that the motor cells of the cord are so much more sensitive and readily affected than the sensory? Is it possible that, supposing the nitrite to act solely in the way spoken of, the motor system would be so much sooner and more profoundly affected than the sensorium?

I think it is conceivable, and it would appear to be in agreement with the well-known fact that in paralysis motion is generally much more affected than sensation.

Such speculation or reasoning as this, however, proves nothing, it simply brings the matter into the sphere of probabilities; and the only conclusion that I can arrive at is that the nitrite of amyl, by virtue of a peculiar chemical power, does check tissue metamorphoses, and it is possible that its physiological properties depend upon this.

PHILADELPHIA, Jan. 28, 1871.

ART. III. — *On the Secondary Traumatic Lesions of Bone, i. e., the Inflammatory Disorders of Bone which result from Injury.* By JOHN A. LIDELL, M.D., of New York.

AN attentive consideration of this subject¹ has led me to adopt the following conclusions, which are now, for the first time, presented for publication in a compendious form.

1. Osteo-myelitis occurs much more frequently than has generally been supposed. This statement obtains in both civil and military practice, and with the spontaneous as well as with the traumatic form of the disease.

¹ Vide *Surgical Memoirs of the War of the Rebellion*, collected and published by the U. S. Sanitary Commission, vol. i. Hurd & Houghton, New York, 1870.

2. When after amputation, or resection, or compound fracture, or contusion of bone, patients do badly without apparent cause, oftentimes this disease is present, and, unsuspected, leads to disastrous consequences.

3. *Osteo-myelitis* is a much more formidable disorder than *periostitis*. *Traumatic osteo-myelitis very often destroys life; traumatic periostitis almost never.*

4. *Traumatic ostitis* (*i.e.*, traumatic inflammation of the bone-tissue proper) occurs but very seldom, or perhaps never, as a primary affection. Secondary inflammation of the osseous tissue, however, is often met with when bone is injured.

5. Secondary ostitis, but especially its degenerative and destructive forms, is induced by osteo-myelitis much more frequently than by periostitis.

6. The structural changes which the inflammatory process may occasion in the marrow itself are, *a*, its transformation into new bone (*endostosis*); *b*, hepatization or carnification (*sclerosis*) of the medullary tissue; *c*, sup-puration or abscess; and *d*, gangrene.

7. Osteo-myelitis may terminate in recovery, *a*, by resolution, and *b*, by metamorphosis of the irritated medullary tissue into new bone. It is probable that inflammation of the marrow very often disappears, *i.e.*, is cured, in each of these two ways.

8. The inflammatory process, when excited in the marrow, *i.e.*, inflammation of the marrow, is very apt to spread to the surrounding bone, to the periosteum, and to the connective tissue and other structures external to that membrane.

9. Secondary ostitis, when induced in this way, may lead to condensation (*sclerosis*) of the bone-tissue, to rarefaction (*osteo-porosis* or *medullization*), to ulceration (*caries*), and to gangrene (*necrosis*). When sclerosis occurs in bone, the inflammatory process is in reality formative in character; but when the other three results are produced, or either of them, it becomes degenerative or destructive, at least so far as the osseous tissue is concerned. Sometimes all of these consequences of ostitis, namely, sclerosis, medullization, caries, and necrosis, are severally shown in different parts of the same bone.

10. When inflammatory irritation is transmitted to the periosteum from the interior of bone, it is apt to excite the deep or osteo-genetic layer of that membrane to fresh activity, and thus lead to the formation of new osseous laminae (*periostosis*). Occasionally, however, when the irritation is very intense, and the constitutional condition of the subject happens to be bad, *e.g.*, scorbutic, or spanæmic from want of food, or serofulons, it leads to the formation of pus beneath the periosteum, instead of new bone; but the proliferating layer of the periosteum is generally much less disposed to engage in the purulent transformation than the medullary tissue. Not unfrequently the marrow is found extensively destroyed by suppurative inflammation, without there being any disorder of the periosteum, except

some slight reddening and thickening. Generally, the periosteum does not become spontaneously detached from the underlying bone unless necrosis has occurred. While moderate loosening of this membrane is not unfrequently found in connection with osteo-myelitis, extensive detachment, not due to necrosis, is, according to my experience, very rare.

11. Primary periostitis of traumatic origin but seldom gives rise to much trouble. Some degree of periosteal inflammation, however, is often produced by injury. It generally terminates in cure by resolution, or leads to the formation of new bone. Occasionally, periosteal abscesses of limited dimensions or small size form in consequence of it; and in rare instances destructive results ensue.

12. Necrosis is dry gangrene of bone. The inflammatory is probably the most common form. The osteitis which produces it is generally acute. The circulation of nutrient blood in the affected part of bone suddenly becomes arrested from pressure (compression) exerted by the products of the inflammatory process (exudation and wandering cells) upon the capillary bloodvessels, when effused within the unyielding walls of the Haversian canals. The secondary osteitis which thus produces necrosis pretty certainly has its starting-point in inflammation of the marrow much more frequently than in inflammation of the periosteum.

But necrosis is not unfrequently occasioned directly by violence. In the cases belonging to this category, the circulation of blood and nutrient juices is arrested in the affected part of bone, because the force of the blow or other form of injury has sufficed to smash the Haversian canals, the canaliculi and the lacunæ, to a sufficient extent, without producing any solution of continuity or fracture that is visible to the unaided eye.

Removal of the periosteum or the marrow does not necessarily compromise the vitality of the exposed osseous tissue, *i. e.*, does not necessarily produce necrosis. Under favourable circumstances, each of these structures is replaced by a new outgrowth from the bone itself, having the same nature and composition as the lost part.

13. I have also several times seen a *humid or mephitic gangrene of bone*. It is an affection quite distinct from ordinary necrosis, and is produced by causes of which we have at present but little knowledge. In it the disordered bone is wet, more or less softened or rotted, discoloured, *i. e.*, more or less blackened, and very fetid in smell.

14. The marrow, when inflamed, is more inclined to undergo the purulent transformation, *i. e.*, to suppurate, than any other structure in the whole body.

15. Abscess of the marrow induces pyæmia much more frequently than abscess of the connective tissue, or abscess occurring in any other structure of the body; and the reason of this important fact is, because the pyæmic poison or contagium is absorbed from the marrow much more readily than from other structures, and perhaps also because suppuration in the medul-

lary tissue, is more liable to degenerate into putrid forms than suppuration when occurring in the other tissues.

16. Osteo-myelitis not unfrequently leads to pyarthrosis by causing the inflammatory process to spread to and enter a joint-cavity. Medullitis, when located in the extremities, generally exhibits a marked tendency to travel upwards, *i. e.*, towards the trunk. For this reason the articulations invaded by it are usually found to be those which lie next above the bones wherein it has commenced. The cartilage of incrustation in such cases is generally found to be pierced by a considerable number of minute red holes, which look as if they had been made with a punch. This form of pyarthrosis is, for the most part, not very painful. It comes on silently, and is apt to be overlooked. After it has lasted for some time, the cartilage of incrustation belonging to the next bone may also become pierced with little red holes like those described above, and the inflammatory process then spreads from the joint to the medullary tissue of the next bone. Thus, I have seen inflammation commencing in the medullary canal or tissue of the tibia, by spreading, invade the knee-joint, thereby producing pyarthrosis of the knee, and then spreading still further upwards to the femur, occasion osteo-myelitis of that bone. Thus, also, I have known osteo-myelitis of the femur to induce pyarthrosis of the hip, and afterwards occasion osteo-myelitis of the os innominatum. But medullitis sometimes occasions pyarthrosis in another way, namely, indirectly, by inducing a pyæmic poisoning of the blood, which in turn occasions suppurative inflammation of some joint.

17. When new bone is developed from the marrow, or from the common connective tissue, or from the osteo-genetic layer of the periosteum, it is produced without the exudation of coagulable lymph or the presence of any so-called blastema, by proliferation and direct metamorphosis (transformation) of pre-existing histological structures. So also, when the inflammatory irritation is more intense, the medullary tissue becomes converted into purulent matter (abscess), by direct transformation of the medullary cells into pus-corpuscles, and of the basis or intercellular substance into liquor puris.

18. The connective tissue external to the periosteum (*i. e.*, the common connective or so-called areolar tissue), when irritated or inflamed, generally does not produce new bone, unless there is corresponding irritation of the bone-structures themselves. The presence of some osteal lesion is generally required in order to give the formative process in connective tissue an osteo-genetic direction. Unless the bone is wounded, new osseous growths but seldom or never form amid muscular structures, at least in cases of gunshot injury.

Treatment.—With regard to the treatment required by the secondary traumatic lesions of bone, and especially with regard to the operative procedures required by them, experience and reflection have led me to adopt the following views:—

1. Diffuse osteo-myelitis, whether traumatic or spontaneous in origin, is very perilous, and generally requires that the diseased member should be promptly excised, if the patient's life is to be saved. In such cases, exarticulation is generally preferable to amputation in the continuity, because by the former procedure the medullary tissue is not subjected to injury. If, however, for any cause, amputation is resorted to instead of exarticulation, it should be performed not through the diseased bone itself, but through the sound one next above the seat of the disease, since it is essential to success that all the diseased tissue should be removed by the operation. The operative procedure, whether it be exarticulation or amputation in the continuity, must, as a rule, be resorted to quickly in order to prove successful, because diffuse suppurative medullitis in most cases speedily induces the purulent infection or pyæmia, and thus quickly occasions death.

2. When an abscess, whether superficial or deep-seated, forms in connection with any bone-lesion, it should generally be promptly evacuated by free incision, for thus the cure may be hastened, and at the same time the tendency to pyæmia may be considerably diminished.

3. In treating the chronic localized or circumscribed forms of bone-disease when necrosis occurs, the dead bone should, for the most part, be extracted by operation as soon as it becomes detached, for then longer delay is usually fraught with evil.

4. Chronic abscess of the bones in general, abscess of the diploë, and abscess situated between the skull and dura mater, usually require that their osseous walls should be pierced with a trephine, in order to set the imprisoned matter free.

5. In the chronic cases of bone-disease in general, and especially in those of traumatic origin, the timely extraction of necrosed fragments, the prompt evacuation of matter from all abscesses—from those occurring in the soft parts by incision, and from those occurring in the bone itself by trephining—aided by appropriate constitutional treatment, ordinarily suffice to effect a cure.

6. In some cases belonging to this category, however, when important joints become implicated, or where abscess occurs in the head of such bones as the femur, tibia, and humerus, or where caries or any other form of degenerative or destructive osteitis gets far advanced or widely spread, it generally becomes necessary to cut off the diseased member, in order to save life. In such cases, also, exarticulation is generally preferable to amputation in the continuity, first because it is more philosophical, but mainly because it yields much better results. Reamputation of stumps at joints (exarticulation), for chronic osteo-myelitis, has proved to be a very successful operation.

ART. IV.—*Extroversion or Exstrophy of the Bladder, successfully treated by means of a Plastic Operation after Wood's Method.* By JOHN ASHHURST, Jr., M.D., President of the Pathological Society, Surgeon to the Episcopal Hospital, Surgeon to the Children's Hospital, etc. (With three illustrations.)

EXTROVERSION or exstrophy of the bladder was, until quite recently, looked upon as a condition for which surgery had no remedy. Referring to text-books published but a few years since, I find that Prof. Miller (in 1855) declared that these "miserable cases . . . admit of mere palliation, by wearing mechanical contrivances adapted for protection and comfort;" that Prof. Erichsen (in 1857)¹ believed this malformation to be "incurable," and was able to justify this opinion by adducing the fact that the operations performed in these cases "have never proved successful, and have terminated in some instances in the patient's death;" while Prof. Gross, in the last edition of his *System of Surgery* (1866), though referring to the well-known cases of Pancoast and Ayres (which will be again mentioned), concludes his observations by candidly confessing his "want of confidence in this operation," and declares that "the very nature of the affection which it is intended to remedy forbids the idea that it can ever be sufficiently successful to compensate the patient for the pains and perils incurred in its performance." These quotations are my excuse for bringing before the profession the details of the following case, the only one in which I have had occasion to operate for exstrophy of the bladder.

CASE.—A. M. W., a girl six and a half years of age, was admitted to the Children's Hospital of this city, in the latter part of November, 1870. Her history was a sad one; the distress and suffering which were due to the congenital malformation which she presented (extroversion of the bladder) had been greatly aggravated by a severe attack of dysentery which occurred when she was but six months old, and which left her with complete prolapse of the rectum, the invaginated bowel protruding almost constantly to the extent of about four inches. She was evidently an extremely nervous and irritable child, screaming with terror upon the approach of any stranger, so that it was at first difficult to pacify her sufficiently to permit a satisfactory examination to be made.

The posterior mucous surface of the bladder protruded in the hypogastric region, forming a prominent tumour about an inch and a half in each diameter of its base, and readily reducible by slight pressure. The orifices of the ureters were clearly perceptible at the lower part of the inverted bladder, and the anterior commissure of the vulva was, as usual in these cases, deficient, the bladder appearing to project between the nymphæ, continuous with which, on either side, were the halves of the bisected clitoris. The hymen was perfect, and the vagina apparently well formed. The pubic symphysis was, of course, defective, the pubic bones forming

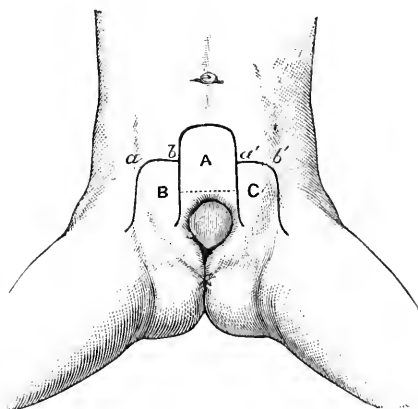
¹ In the later editions of his *Surgery*, Mr. Erichsen admits the propriety of the operation.

well-marked subcutaneous prominences on either side of the median fissure. The umbilicus was normal, and (which is unusual) placed not much lower than in the natural condition. The exposed mucous surface of the bladder was thickened and deeply congested, bleeding upon the slightest touch, while the inner portions of the thighs, with the perineum and buttocks, were reddened and excoriated from the contact of the urine which constantly flowed over them.

On December 2, 1870, the patient having been thoroughly etherized, I proceeded, with the assistance of my colleagues, Drs. H. Lenox Hodge and George C. Harlan, and of several other gentlemen, to perform the following operation.

A flap of a rectangular shape, but with the angles rounded off, was first dissected up from beneath the umbilicus, the dimensions of this flap (Fig. 1, A) being such that, when turned down over the inverted bladder, the protrusion was completely covered; the dissection was carried to within half an inch of the upper surface of the exposed bladder, the flap embracing all the superficial structures, and exposing the sheaths of the recti muscles and the tendinous aponeurosis which constitutes the linea alba. The next step was to form two lateral flaps (B and C), the bases of

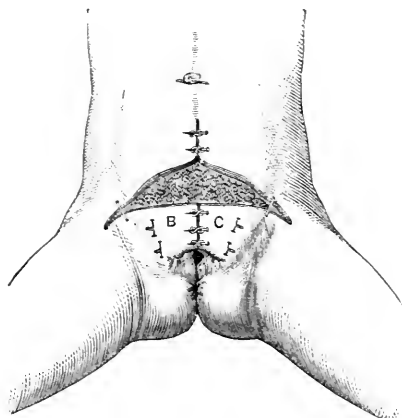
Fig. 1.



which were turned towards the groins, and made sufficiently broad to insure the vitality of the dissected tissues. The small vessels that were divided during the formation of the flaps were immediately compressed with *serrefines*, which acted so efficiently that, upon their removal, not a single ligature was required. The umbilical flap was turned upon itself (in the position marked in the figure by a dotted line) so that its cutaneous surface was in apposition with the exposed vesical mucous membrane; the groin flaps were then slid across so as to cover with their raw surfaces that of the umbilical flap, their upper edges (*a b*, *a' b'*) coming together in a longitudinal direction in the median line. The transplanted and inverted flaps were now fixed in close apposition by the introduction of three lines of sutures. Through each side of the inverted flap were passed two loops of flexible iron wire, each wire being threaded upon two needles (as in the well-known tongue and groove suture of Prof. Pancoast); these needles were then carried through the bases of the transplanted groin flaps, and the ends of wire twisted together over little rolls of adhesive plaster. In the median line three harelip pins were introduced, passing through the whole thickness of the groin flaps, and dipping deeply into but not transfixing the inverted umbilical flap. The extroverted bladder was thus completely covered in with a double layer of tissue, the width of the groin flaps being such that they overlapped the umbilical flap both above and below; there was no undue tension, for the flaps were of ample dimensions, and any strain that might be brought to bear upon them by the subsequent movements of the patient

would be equally divided between the three lines of sutures.¹ The large wound that was left by the inversion and transplantation of the flaps was diminished as much as possible by bringing its upper part together in a longitudinal, and its lateral parts in a transverse, direction. The whole wound was then dressed with oiled lint, covered with oiled silk, and the

Fig. 2.

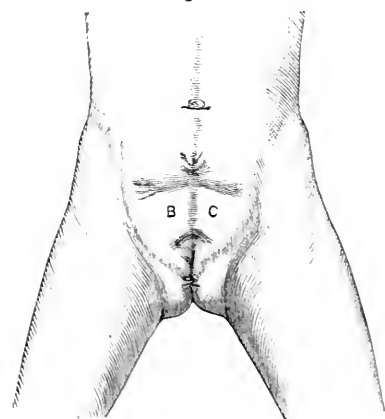


patient placed in bed in almost a sitting posture, with the shoulders elevated and the knees drawn up, so as to insure complete relaxation of the abdominal muscles. The appearance of the part immediately after the operation is shown in Fig. 2.

The subsequent history of the case is soon told. The flaps united throughout by adhesion, the last suture being removed on the eighth day, and the patient from this time presenting merely a broad granulating surface, stretching across the lower part of the abdomen. This surface steadily contracted, without any appearance of cicatrization, until

it was about one-fourth of its original size, and then slowly healed from its edges like any other granulating wound or ulcer. All dressings were removed on the 30th of January, 1871; but then one corner of the cicatrix reulcerated superficially, and this took almost as long to heal as the whole of the original wound. The relief from suffering afforded by the operation was most marked, and even the tendency to prolapse of the rectum seemed for a while to have disappeared, but returned, in some degree, as cicatrization progressed, requiring, at times, the use of an anal supporter. Incontinence of urine in the erect posture of course persists, so that, when the patient is moving about, it will always be necessary for her to wear a "railway urinal," or other portable receptacle; but in the recumbent position her bladder now forms a pouch, in which she can retain her water for about two hours.

Fig. 3.



This patient was in attendance at the hall of the College of Physicians on the night of April 5, 1871, upon the occasion of a stated meeting of that body, and a large number of the Fellows then took the opportunity of examining the case, and of

¹ The introduction of the lateral rows of sutures was the only point in which my operative proceeding deviated from that employed by Mr. Wood.

verifying the satisfactory result of the operation. The appearance of the part at this time is well shown in Fig. 3.

This little girl, who when she first entered the wards was a constant sufferer, looking with suspicion and terror upon all who approached, and feeling, like Ishmael, that every one's hand was against her, now spends the whole day with her fellow-convalescents in the play-room or garden of the hospital, and no longer seems to the visitor any less happy than her companions. She will probably go into the country this summer to recruit her general health (somewhat impaired by confinement), and if, when she returns, her rectal trouble still continues, the propriety of operative interference for its relief will be considered.

Remarks.—The operation which was performed in the above-recorded case is that which is known as *Wood's*, from having been particularly recommended by Mr. John Wood, the present distinguished occupant of the chair of surgery in King's College (London), so long adorned by Sir William Fergusson. Mr. Wood has probably a larger experience in the treatment of exstrophy of the bladder than any other living surgeon, having himself operated in no fewer than eight cases up to the end of 1868. He has published the details of these operations in a most interesting and instructive communication to the Royal Medico-Chirurgical Society, printed in the *Transactions*¹ of that body for the year 1869. To that paper I would invite the reader to refer for a full account of the earlier attempts made by surgeons to relieve this most distressing congenital deformity, and of the various modes of operative procedure which have been adopted. Passing by the efforts of Dieffenbach, Langenbeck, and others, which appear to have been uniformly unsuccessful, we find that Richard, a colleague of Nélaton, operated in 1853, by inverting a flap derived from below the umbilicus, and covering its raw surface with a bridge of skin dissected from the front of the scrotum—the operation being modelled after that which had been suggested and successfully practised by Nélaton in cases of epispadias. Richard's patient, a man aged 24 years, unfortunately died of peritonitis on the ninth day. The first successful plastic operation for extroversion of the bladder was performed by Prof. Pancoast, of this city, in 1858, the method adopted by this distinguished surgeon being the formation of two lateral flaps, which were turned with their cutaneous surfaces towards the bladder, thus forming an effective covering for that organ; the raw surfaces of the flaps, as well as the surfaces from which they were dissected, were left to heal by granulation. An interesting feature in this case was the fact that, by the contraction of the groin wound, an inguinal hernia, which had previously existed, was entirely cured. Prof. Pancoast's case is, I think, justly entitled to be considered as having been successful, although the patient died some months later, from causes unconnected with the operation. In the latter part of the

¹ Med.-Chir. Trans., vol. lii. p. 85; see also No. of this Journal for April, 1869, p. 551.

same year (1858) Dr. Daniel Ayres, of Brooklyn, operated on a woman, 28 years of age, by turning down a flap from beneath the umbilicus, covering it in by simply dissecting up the tissues on either side of the bladder, and bringing them together with sutures in the median line. This case was entirely successful. Mr. Holmes, the eminent surgeon of St. George's Hospital, operated in 1863, by inverting a flap from one groin and covering it in with a second flap derived from the opposite side. He had thus operated in five cases (three of them successful) up to the end of 1868. Essentially the same method was pursued by Mr. Wood in some of his earlier cases, but more recently he has adopted the plan which was followed in the instance of the patient whose history forms the subject of this paper. Another mode of procedure has been employed in two cases most skilfully and successfully operated upon by Dr. F. F. Maury, of this city. (See Trans. of Coll. of Phys. of Phila. in this No.) A broad saddle-shaped flap, attached at both ends, having been in each instance dissected from the scrotum, inverted bridge-like over the extroverted bladder, and fixed in a groove made for the purpose, above the protruded organ, with the tongue and groove suture. In each case a double inguinal hernia was cured by the subsequent contraction of the wound, which, with the raw surface of the flap, was left to heal by granulation. Quite recently Mr. Barker, of the Melbourne Hospital (Australia), has operated with complete success upon a girl of seventeen, by simply taking flaps from either side of the exposed bladder and uniting them with deep and superficial sutures in the median line, tension being relieved by means of longitudinal incisions.

Of the various operative procedures which have been briefly adverted to, those of Richard, Ayres, and Wood seem to me decidedly the best. The most important feature in each is the employment of an *inverted umbilical flap*, and only by the use of such a flap can the escape of urine *above* the seat of operation be prevented. Mr. Holmes, indeed, advises that no attempt should be made, at the first sitting, to obtain adhesion at the upper part of the exstrophied bladder, but that the surgeon should content himself with forming a bridge over its anterior surface, reserving the completion of the treatment until a subsequent occasion. In almost every case in which the inverted umbilical flap has not been used, at least two operations have been required for the complete covering of the bladder. Dr. Ayres's method would certainly appear to be the most eligible where it could be practised, having the great advantage of leaving no raw surface to heal by granulation. I had intended to resort to this plan in my own case, but found, after raising the umbilical flap, that to do so would produce so much strain upon the sutures as to endanger the success of the whole operation. Richard's method would, of course, be applicable only in the case of a male subject; but even there would promise no better result than Wood's procedure, while it is, I think, better to preserve the serotal tissues for the subsequent formation of a roof to the

urethra. Hence, after a careful reconsideration of the entire subject, I adhere to the opinion which I have already expressed in the pages of this Journal (No. for April, 1870, p. 470), that Mr. Wood's operation is, upon the whole, the best which has been as yet devised.

I have in this paper referred to twenty cases (including my own) in which plastic operations have been resorted to during the last eighteen years, for the relief of exstrophy of the bladder. Of these 20 cases, 14 were absolutely successful, 3 were failures (Holmes 2, Wood 1)—the patient's condition being, however, in no degree rendered worse by the operation—while 3 terminated fatally (Richard, Pancoast, Wood), though in only 1 (Richard) was death attributable to the interference of the surgeon; a most triumphant refutation, it seems to me, of the adverse opinion, which, as has been seen, was but a few years since held by the highest authorities in the profession, with regard to the propriety of surgical interference in these cases. Of the 20 patients, 16 were males and 4 females; 13 were under and 5 over twenty years of age, the age of the other two not being mentioned.

The wood-cuts which illustrate this paper are copied from drawings executed by the skilful pencil of my friend and former house-surgeon, Dr. C. B. Nancrede.

Table of Twenty Cases of Plastic Operation for Exstrophy of the Bladder.

Operator.	Reference.	Whole No. of cases.	Successful.	Failures.	Died.
Richard,	Wood, Med.-Chir. Trans., vol. lii. p. 96	1	...	...	1
Pancoast,	N. A. Med.-Chir. Review, July, 1859	1	...	...	1 ¹
Ayres,	Am. Med. Gazette, Feb. 1859	1	1	...	...
Holmes,	Surg. Treatment of Children's Diseases, 2d ed. p. 150	5	3	2	...
Wood,	Med.-Chir. Trans., vol. lii. p. 85	8	6	1	1 ¹
Maury,	Am. Journ. of Med. Sci., July, 1871	2	2	...	...
Barker,	Med.-Chir. Trans., vol. liii. p. 187	1	1	...	...
Ashhurst,	Vide <i>suprà</i>	1	1	...	...
	Aggregate	20	14	3	3

ART. V.—*On Acute Dropsy: Scarlatinal and Idiopathic.* By H. C. WOOD, JR., M.D., one of the Physicians to the Philadelphia Hospital.

DR. HUGHES BENNETT probably expresses fairly the general belief of the profession in regard to the immediate cause of dropsy, when he asserts² that

¹ Died from causes unconnected with the operation.

² Principles and Practice of Medicine, 4th ed., p. 216.

"serous effusion or dropsy is always indicative of mechanical obstruction to the return of the blood from the capillaries through the veins." As a corollary from such opinion, follows of necessity the belief that the anasarca, which forms so prominent a feature in acute as well as chronic desquamative nephritis, is due to changes in the blood, produced by the kidney trouble; that the character of the blood is so altered by the disordered action of the latter glands as to interfere with its ready circulation through the capillaries, and in this way produce a damming up, as it were, of the blood, and a consequent forcing out of its serum.

The object of the present paper is to show that the theorem of Prof. Bennett is not correct, or at least is not proven and even not probable; that the evidence, as far as it can at present be made out, shows that a large proportion, if, indeed, not all acute dropsies, are due not to a mechanical impediment to the circulation, but to a peculiar condition of the cellular tissue, whereby its natural secretion or exhalation is enhanced, so that the water may be said to be actively thrown or drawn out from the vessels.

To establish this, I shall first attempt to prove the following propositions:—

First. There are œdemas local in character, which cannot be caused by any mechanical interference with the circulation, but which are evidently connected with a state of irritation of the cellular tissue of the part affected, which irritation is sometimes absolutely local in character, sometimes evidently dependent upon a constitutional blood-affection.

Second. That the dropsy of scarlet fever is mostly, if not always, independent of, *i. e.*, not caused by, the disease of the kidney.

Third. There are cases of idiopathic general anasarca, absolutely resembling those associated with acute desquamative nephritis, and produced by the common cause of the latter, in which, however, there is no disturbance of the kidneys, nor of the heart, lungs, or liver.

Fourth. By the use of certain drug or drugs we can produce general anasarca without albuminuria, to be followed by the presence of both albumen and tube casts in the urine, if the use of the poison be persisted in, showing that the anasarca and kidney trouble are the results of a common irritant cause, unless it be asserted that the anasarca produces the albuminuria.

The truth of the first of these propositions is so apparent that it seems scarcely to need a word of comment. It is inconceivable that in erysipelas there should be any mechanical cause of the œdema, which manifests itself often among the first symptoms, and which is evidently due to a condition of irritation. To be sure, there is a state of congestion, but it appears to me just as sensible to refer the watery exudation in pleuritis and pericarditis, or the serum thrown off from a blister, to mechanical interference with the circulation by congestion, as to attribute the serous

exudation of erysipelas to the same cause. The œdema of erysipelas travels so with the disease, and is confined so strictly and sharply to the affected part, that it seems impossible to judge otherwise but that it bears the same relation to the fibrinous exudation of ordinary inflammation that the serous exudation does to the fibrinous in pleuritis and pericarditis: it being as much a function of the cellular as of the serous tissue to secrete, or exhale, or contain, whichever term may be preferred, an amount of fluid. Again, it is a familiar clinical fact of every-day occurrence that in cases of intense phlegmonous inflammation, beyond the zone of highest action where *fibrinous exudation* is being formed, there is a space where the irritation is less intense, in which *serous exudation* is thrown out. If there is any proof that the one exudation is any more the result of mechanical interference than the other, I do not know where to find it.

The second proposition is evidently simply the assertion of a fact to be established by clinical evidence. I am unable to bring forward anything from my own experience, yet the facts are perhaps all the more reliable as having been observed by widely separated physicians, unbiased in their judgment by theories, and often apparently very much puzzled by what they saw.

It is well known that in certain epidemics of scarlet fever there is a much greater tendency for dropsy to appear as a sequela than in others. It would seem that in the same way, in some peculiar epidemics, dropsy without albuminous nephritis is especially abundant. Dr. Phillipe, of Berlin, in a paper published in *Casper's Wochenschrift*, 1840, appears to have described such an epidemic. Unfortunately I have not had access to the memoir, but, as quoted by Dr. Gee¹ from Jaccoud, in sixty cases of scarlatinal anasarca, Phillipe did not find the urine once albuminous. Descriptions of, and allusions to, single cases of dropsy without albuminuria following scarlatina are not very rare in medical literature. In the *Gazette des Hôpitaux* for 1835, Baudelocque² describes such a case; but the earliest distinct recognition of the fact, that I am aware of, is in Blackall's "Observations on the Nature and Cure of Dropsy," London, 1814, from which work the following cases are abstracted.

CASE I.—"M. T., æt. 12, was just recovering from scarlatina, in which the inflammation of the skin had been severe, and the bowels unusually relaxed. On the evening preceding my visit, the ankles and knees had begun to swell. There was a considerable degree of languor and loss of appetite; a quick and weak pulse; pain of the left side; a loose state of the bowels; and swelling of most of the joints, particularly the left knee, in the large bursa mucosa, above which there was very evident fluctuation. The urine was rather scanty, pale, and without sediment; it was coagulable neither by heat nor nitrous acid, and in

¹ Reynolds' System of Medicine, vol. i.

² I have not been able to gain access to the Gazette for the year mentioned.

the slightest degree by the oxymuriate of mercury. Some precipitate was produced by the infusion of galls, and a copious flaky one by acetate of lead.

"True dropsical symptoms succeeded rapidly. In less than a fortnight she became universally anasarca, and there was a fluctuation of water in the abdomen, with orthopnoea and frightful dreams. At length she spent several successive nights in her chair, unable to lie down. It was impossible to entertain any doubt of the presence of hydrothorax. During the whole of this time the urine, examined daily, gave no appearance of coagulum. When she was most oppressed it was remarkably diluted and quite colourless. She finally made a complete and rapid recovery by the use of smart purges of jalap, and scammony and Peruvian bark."

CASE II.—"S. S., æt. 45, Devon and Exeter Hospital. Considerable anasarca; with a very feeble pulse and loss of appetite; urine pale, rather scanty, not coagulable by heat or nitrous acid, and depositing no sediment but a slight cloud. Six weeks before, she had been attacked by fever and a scarlet eruption, to which her dropsical symptoms had succeeded in a few days. She derived immediate advantage from the bitter infusion and alkaline salt, as recommended by Sir John Pringle, and soon recovered."

Speaking of these observations of Blackall, Rayer says: "I have known many similar cases, but, as none have died, I have been uncertain as to the cause or mode of production of the dropsies.¹

The existence of scarlatinal anasarca without affection of the kidney is also distinctly and emphatically asserted by Barthéz and Rilliet,² who state that they have seen one fatal case, and established not merely by investigation of the urine during life, but also by examination of the glands themselves after death, that the kidneys were not affected.

Becquerel and Rodier³ state that cases of dropsy following scarlet fever without albuminous urine are not rare. In the *Dublin Medical Press* for 1866 three cases of post-scarlatinal dropsy without albuminuria are related by G. Stevenson Smith. Unfortunately I have been unable to refer to the journal itself, and the mere reference is all that is given in the Sydenham Society's Year Book.

Dr. Graily Hewitt⁴ says, speaking of scarlatinal dropsy: "In many cases is there at the same time albuminous urine and sometimes slight alteration in the structure of the kidney; sometimes this change is wanting, and the urine is also normal." Dr. Hambursin⁵ says: "Of these twelve cases of universal anasarca, eight followed symptomatically upon albuminous urine. This relation is about the same as that of Guersant and Blache; it is very different from that of Hamilton, who in sixty cases of scarlet fever dropsy found fifty-eight with albumen in the urine."

¹ *Traité des Maladies des Reins*, tome ii. p. 447.

² *Traité des Maladies des Enfants*, 1st ed., tome ii. p. 617 (2d ed., tome iii. p. 179).

³ *Chimie Pathologique*, 1854, p. 343.

⁴ *Journal für Kinderkrankheiten*, vol. xxx.

⁵ *Ibid.*, 1860.

Dr. Stiebel,¹ of Christus Kinderhospital of Frankfort, is very emphatic in his declarations. He says: "Snow has in twelve cases of scarlatinal dropsy found albumen but six times. I have, since my attention was directed to the point, seen more cases of scarlet fever dropsy without than with albumen. If the average of observed cases of scarlet fever dropsy be taken, it will be found that in not more than one-third of the cases is albumen present." Dr. Felix von Niemeyer² writes as follows:—

"The second form of scarlatinous dropsy, not accompanied with albuminuria, is a sequela of scarlet fever as free from danger as it is inexplicable. It generally develops gradually, may become very extensive, is not limited to the subcutaneous cellular tissue, and rarely extends to the serous membranes. In some cases of scarlatinous dropsy without albuminuria recovery takes place in a remarkably short time, as I know from personal experience."

Cases of scarlatinal albuminous nephritis without dropsy are perhaps even more rare than cases of dropsy without nephritis. Yet they do occur, according to the testimony both of Rayer³ and of Barthez and Rilliet.⁴

Simon⁵ also says: "We have dropsical symptoms with albuminuria, dropsical symptoms without albuminuria, and albuminuria without dropsical symptoms."

Further, when both dropsy and nephritis are present, sometimes one, sometimes the other, is the first to appear. Thus, Gee⁶ says, "dropsy is mostly preceded by albuminuria for a day or two, occasionally the dropsy precedes the albuminuria; very rarely, when both symptoms have been present, the albuminuria nearly wholly ceases, and yet the dropsy remains." Dr. Stiebel (loc. cit.) asserts that when albuminuria is present in cases of scarlatinal anasarca, the latter generally precedes the former by several days.

Again, the onset of the dropsy is often very sudden, and directly traceable to an external influence, which, although capable of causing congestion of the kidney, can hardly, from the quickness of the result, act on the cellular tissue indirectly through those organs.

Thus, Barthez and Rilliet (loc. cit.) affirm, exposure to cold is in the immense majority of cases followed by immediate anasarca. Trousseau says, in his *Clinical Medicine* (Sydenham Society's translation): "Anasarca generally sets in suddenly. It invades the face and every part of the body. The turgescence sometimes attains its maximum in twenty-four hours."

From the facts above noted—that either dropsy or albuminous nephritis may exist alone after scarlet fever, but are in the vast majority of

¹ Ibid., 1859.

² A Text-book of Practical Medicine, American edition, vol. ii. p. 541.

³ Loc. cit., tome ii. p. 429.

⁴ Loc. cit., 1st ed., vol. ii. p. 617.

⁵ Simon's Chemistry, American edition, p. 507.

⁶ Reynold's System of Med., 1st ed. vol. i. p. 347.

cases associated together; that either may precede the other; that they are often simultaneously and rapidly developed after exposure to a sudden malign influence—I think it follows that neither is the cause of the other, but that they are both the results of a common cause—a common irritation.

The evidence I have brought forward is no doubt but a tithe of what might be gathered by a thorough search through medical records. It is, however, amply sufficient; and to those who are determined to explain scarlatinal dropsy as a consequence of Bright's disease, I can but quote the language of Dr. Stiebel:—

“Selig sind die Armen an Wissenschaft, und selig sind die Einseitigen, und selig sind Diejenigen, welche nicht sehen und doch heilen! Dahin gehören die, welche alle Wassersucht bei Scharlach aus Erkältung entstehen lassen, und Diejenigen welche die Bright'sche Krankheit überall zu Erklärung bereit ist.”

Dr. Da Costa, in a clinical lecture upon œdema (*Medical Times*) following low fever, describes a case, which probably was of similar nature to the non-albuminous dropsy of scarlet fever, as follows:—

“Now, of this *general* swelling following fevers, I have seen some curious cases, and not only in typhoid and typhus fevers, but also in the so-called typho-malarial malady. I will report one to you which was very striking. A few months since I attended a young gentleman with a malarial fever of rather blurred type. Towards the end of it he was very weak, but without decided heat of skin, when his whole body began to swell, his face most noticeably and first, yet the rest of the body soon shared in the great increase. The face was so swollen that he was unable to wrinkle his forehead—a matter which gave him much distress. The swelling was not accompanied by redness; indeed, the skin was pale, elastic, and only in some parts pitted even on the strongest pressure. The tumefaction was unattended with pain; and I could not find in the state of the heart or of the veins, or in the composition of the urine, the least clue to it. Under iron and diuretics, the disorder lessened; yet it remained after he was so far convalescent that he was able to be about.

In cases of this kind the œdema is very deep, and the swelling of the tissues great; yet the pitting is often slight; and the view of their being a more solid exudation than serum, and a coexisting swelling of the muscles, has suggested itself to me; but I have no proof of its existence to offer.

While speaking of these general swellings and their connection with dropsies, let me point out to you a fact which may be of some interest. You know how often in typhoid or typhus fevers, particularly in grave cases, albumen is present in the urine; and it may occur to you, as it did to me, to inquire whether these are the cases in which the swellings under discussion, especially those which are general, follow the temporary albuminuria. They are not. I have examined into the matter in between thirty and forty cases of decidedly albuminous urine in low fevers, and in not a single instance did swelling of the body subsequently happen.”

The third proposition I propose to establish partly from clinical records and partly from my own experience. Dropsy of late years has not been a favourite subject of medical writers, and the older records are mostly so imperfect as not to be fairly available. In the *Medico-Chirurgical Transactions* for 1812, Dr. Wells states that he has seen in the hospital six cases of œdema, not preceded by any disease to which dropsy is ordinarily

attributed as a result, in which the urine was free from albumen. The Doctor inclines to explain these as of anemic origin, although he very positively states that there was no apparent weakness about the patients. One of these cases at least evidently belonged to the affection now under consideration, namely acute idiopathic dropsy, for Dr. Wells says the profound anasarca quickly followed the application of cold to the body.

Dr. Edw. J. Seymour, writing in 1837,¹ clearly portrays the main features of the affection. His words are as follows :—

“In some cases, after sudden exposure to cold and wet, the whole cellular membrane becomes infiltrated, the swelling is hard and tense, the pulse hard, the urine very scanty and incoagulable by heat or acids, the heart beats without symptoms of organic disease, though its action be increased, the bowels are costive, the effect likewise follows very rapidly on the cause applied; the patient's health has been good. There is in this state a general feverish excitement. The cure of this form of disease will generally be perfected in about ten days.”

I suppose, however, most persons will feel that later testimony is of more value, because the application of science to diagnosis has not only been perfected, but become so much more general than formerly. Fortunately I am able to quote the description of a case of this character from an authority whose word on a dropsical point none can call in question. The case was published with clinical remarks, by Dr. Basham, in the *London Lancet* for 1867. The following is a summary of the more important points :—

Richard H., æt. 26, admitted to hospital Jan. 22. About a fortnight previously having been exposed to wet and cold, he had chills, pains in limbs, and fever, and a morning or two afterwards suffered from difficult breathing, with swollen puffy state of the face and of the surface of the body generally. On admission, the aspect of the patient was strictly characteristic of acute albuminuria. The face was puffy; the eyelids were œdematous, as well as the backs of the hands and the arms as far as the elbows; the surface of the chest was slightly anasarcaous, but the dropsy was more pronounced from the thighs downwards. The respirations were hurried and the breathing movements short; a deep inspiration could not be taken. The breath-sounds throughout the chest were indistinct, and everywhere obscured by moist, wheezy murmurs. The resonance was equal in the corresponding regions of the two sides. The sounds of the heart were indistinct, and everywhere obscured by moist chest-sounds. Pulse ninety. He complained of a teasing cough, worse at night, and dyspnoea, coming on in paroxysms. The expectoration was bronchial mucus. There was frequent micturition, but the urine was scanty in quantity, very high coloured, of a bright sherry colour, and of sp. gr. 1022. Not a trace of albumen could be detected in it. Neither heat and nitric acid, nor nitric acid alone (Harley's process) poured gently down the side of the tube so as to form a layer at the bottom, indicated the faintest trace; nor was any cloud produced by nearly pure alcohol. He was treated by purgatives and diuretics, and in nine days the dropsy had disappeared. The urine was carefully examined every day, but no albumen was ever discovered. A faint pericardial murmur was found in the heart. It was distinctly to and fro, but was unaccompanied by any pulse affection, which was from 70 to 80, or embarrassed breathing after the dropsy was relieved. The pericarditis was believed to date back to a previous attack of rheumatism. The man left the hospital perfectly recovered eighteen days after admission.

¹ The Nature and Treatment of Dropsy. London, 1837.

The only case of idiopathic dropsy that I have seen myself occurred as follows:—

The patient was a lady of about forty years of age, whose family physician I had been for some years. She was free from all organic disease. About two years before she had had a miscarriage, but, excepting at that time, and whilst she was suffering from some uterine cervicitis produced thereby, she had enjoyed good health ever since I knew her.

October 25, 1870. I was called to see her. During the summer she had suffered greatly from the excessive heat, but had not been sick. For the last week or two her friends had told her that she was looking very full in the face, but she herself had perceived nothing until the previous Thursday, when, on attempting to put her shoes on, she found her feet so swollen as to prevent her. By Sunday she was in the same condition as at present.

Present condition.—Face and legs very highly œdematous; trunk and arms very decidedly so. Face somewhat pale, but there are no marks of anæmia. Tongue contracted, firm, without teeth-marks. Heart-sounds normal; bowels normal; urine, according to her statement, passed in normal amount, limpid, free from sugar or albumen. Ordered R. Potassæ bitart. ʒj; inf. juniperi Oj.—M. S.—Take in twenty-four hours

28th. Swelling gone from face; nearly so from feet. Ordered Basham's mixture.

30th. Patient well.

December 1. Patient has remained well ever since.

In the last two cases it is simply impossible to explain the dropsy as either renal or anæmic. The sudden onset, its universal character, and rapid disappearance make a group of symptoms which cannot be explained upon either supposition. Moreover, the state of the urinary secretion shows that the kidneys were not affected, and to affirm that the patients were anæmic is equally to fly in the face of the facts. There were no indications of the existence of anæmia, and nothing in the past history to have produced it. I, therefore, am forced to believe that the cases were instances of pure idiopathic dropsy, unconnected with disease of any organ save the cellular tissue or vessels.

That the continued use of arsenic in doses just sufficient to cause irritation of the intestinal canal, will, in many persons, produce very marked œdema, is a fact known to every practitioner from personal experience. Since my attention has been directed to the present subject, however, I have not seen any case of arsenical anasarca, and have had, therefore, no opportunity of studying the relations between it and albuminuria. Prof. Stillé, in his work on Therapeutics (vol. ii. p. 705), very clearly sketches the relation between the two affections as follows: "Under the influence of continued small doses of arsenic, a characteristic puffiness of the face arises, with œdema of the eyelids, which at first is most visible in the mornings, but is afterwards more permanent and extensive, occupying the ankles, the limbs, and the abdomen with a dropsical effusion. As under larger doses the urine may become bloody, so it may become albuminous

under the operation of those we are considering. When the dropsy is not excessive, it generally subsides on the suspension of the medicine."

The fullest study of the subject with which I am acquainted is that of Dr. S. Weir Mitchell.¹ From this memoir the following is gleaned:—

In the fall of 1858, C. J. W. consulted Dr. M. on account of disease of the chest. On December 16, he began to take five drops of liq. potassæ arsenit. three times a day. January 8, 1859, he appeared at the office suffering from sore throat and profuse universal dropsy, general anasarca and ascites. His urine now had sp. gr. 1016, was acid, and contained albumen in small amount. A few very pale tube-casts were found, but no blood. Under suspension of arsenic and exhibition of saline diuretics, the dropsy and albuminuria disappeared together; by January 25 were gone. A month later, at urgent request of patient, arsenic was again employed, his urine having been previously examined for albumen thrice with negative results. At last dropsy suddenly made its appearance, and rapidly became profuse. The urine now contained a very little albumen. On interruption of arsenic and use of salines, as before, anasarca and albuminuria rapidly disappeared. After an interval of six weeks, during which his urine was studied with negative results, arsenic was again employed, and dropsy and albuminuria soon appeared simultaneously or very nearly so. The second case was in a dyspeptic woman, suffering from lepra, to whom Fowler's solution was given. On the eleventh day she exhibited some puffiness about the eyes. At this time the urine was on two successive days of 1023 and 1028 sp. gr., and free from albumen. A week after this the anasarca became alarming. Pulse 120; skin hot and dry; urine acid, specific gravity 1023; rather light-coloured, and containing a slight amount of albumen, no blood, a few very pale renal tube-casts. Under active purgation the symptoms rapidly subsided. The patient said she had taken cold directly after the previous visit, and had had fever and nasal catarrh, with pains in limbs, during which the dropsy suddenly increased.

In other cases of arsenical œdema, Dr. Mitchell failed to find any albumen in the urine. He says: "Among the rare instances of general arsenical œdema seen by me, since noticing the albuminous urine, were two, at least, in which the dropsy was marked enough to lead me to suppose that I should discover the urine to be albuminous. This failed to be the case."

Summing up his results, Dr. M. says: "I wish to be understood as affirming that, in extreme arsenical œdema, there may ensue secondarily a slightly albuminous state of the urine."

Arsenic, in its action upon living tissues, is as universal an irritant as can be imagined. Nerve, muscle, glands, everything, yield to its influence an immediate response of excitement and inflammatory action. When given in decided, repeated doses, there can be no doubt that it acts as an irritant to the kidneys. In comparatively moderate doses it provokes a measure of inflammatory action on the part of the secreting substance of the gland, and albumen and tube-casts in the urine are the results. If the dose be larger the inflammatory action becomes more intense and scanty, and bloody urine marks the higher degree of renal irritation. It is useless to attempt to explain arsenical œdema as anæmic. Its sudden manifestation, its rapid increase, its immediate subsidence on the discontinuance of

¹ New York Med. Journal, vol. i.

the drug, are enough to positively disprove its dependence upon a watery state of the blood.

Moreover, there is no evidence in the cases that there is a marked anæmia. The supposition is a purely gratuitous one. The cellular tissue is evidently subject to the same laws as the other tissues, and the serous exudation from it under the influence of arsenic must be of similar origin to that from the kidneys and bowels educed by the same agent. *The dropsy of arsenical poisoning must be a dropsy of irritation of the cellular tissue.*

Having demonstrated the four propositions brought forward, before concluding the argument a fifth is necessary.

Fifth.—The non-albuminous dropsy of scarlet fever is not anæmic in its origin, but dependent upon irritation of the cellular tissue.

This proposition is rendered necessary by the fact that an attempt has been made by Becquerel, and especially by Dr. Behrend,¹ to explain the existence of cases of scarlet fever dropsy without albuminuria by anæmia. Dr. Behrend says: "This form of dropsy depends less on congestion of the kidneys than on the deficiency of fibrin in the blood; which, when there is an effort to eliminate the scarlatinal poison by the skin and kidneys, cannot effect this process, but gives rise to a watery exudation." If this is really any explanation, I cannot perceive it: how, or even why, it gives rise to a watery exudation, is not apparent, and is not stated. The course and history of the cases are opposed to the idea that there is a mere leakage from a too watery state of the blood. I think clinical experience will bear me out in asserting that, until the very last stages are reached, there is in pure anæmia little tendency to effusion into the cellular tissue so long as the recumbent position is maintained, unless organic disease interferes with the circulation, and that when dropsy does appear it is of comparatively small extent, and evidently for a long time dependent upon gravity for its existence. I lost recently a man with pseudo-leukæmia, who died of absolutely nothing but watery blood, and yet there was no dropsy. I have another case in my ward at the hospital of probably similar nature—a man absolutely anæmic, without discoverable organic disease, save some doubtful splenic enlargement, with absolutely white lips and tongue, and yet without a particle of dropsy.

Now in scarlet fever the anasarca often appears first in the face, is always evidently independent of gravity, is sudden and profuse, even violent in its onset. Quoting Dr. Stiebel again: "It often comes quickly and in a few hours swells up the whole body; even as quickly as it comes may it disappear, and the whole body return in two or three days to its normal state." Again the non-albuminous scarlatinal dropsy is, therapeuti-

¹ The Half Yearly Abstract of the Medical Sciences, edited by W. H. Ranking, 1850, Am. ed., p. 31.

cally viewed, not that of anæmia—for it is speedily cured by those remedies which would increase anæmia, and which clinical experience has shown are powerless against serous effusion, when occurring really from anæmia; namely, brisk purgatives and diuretics. The evidence is then complete, that the dropsy under consideration does not depend upon anæmia.

The history of arsenical œdema evidently explains these cases. The disease of the kidney is due to an irritant poison absorbed by or generated in the blood, and the same irritant excites over-action in the cellular tissue. Sometimes the brunt of the irritation is borne by the one, sometimes by the other, and according as the case may be, nephritis or dropsy is the prominent result.

If these things be so, the five propositions are established, and the following conclusions inevitable:—

First. That in acute Bright's disease, whether originating from scarlet fever, arsenical poisoning, or cold, the dropsy is not a result of the kidney disease, but with the latter is dependent upon a common cause.

Second. That an irritant poison, organic or otherwise, may give rise to dropsy without other appreciable organic disease.

Third. That exposure to cold and wet may produce dropsy, without other disease, and that there is therefore such an affection as acute idiopathic dropsy.

Fourth. That acute dropsy is mostly, if not always, the result of irritation of the cellular tissue.

Some clinical experience that I have had would lead me still further, and would indicate that we are not altogether correct in entirely discarding the old ideas about the active role played by the absorbents and exhalants, even in chronic dropsy. That living membranes and cells have almost absolute control over endosmose and exosmose—that absorption without appreciable exosmose may take place with the exertion of great actual mechanical force is known to every vegetable physiologist. The roots of plants return to the soil, as an exosmotic current, almost, if not absolutely, nothing. The amount that they absorb is immense, measured by tons. Nor is the absorption a feeble action, on the contrary, it is a great power. An oft-repeated experiment showing this, is made by cutting off a vigorous grape-vine close to the ground in the spring, when the sap is running, and attaching to it by means of an India-rubber tube a manometer. In this way it has been shown that the absorption power of the roots of a full-sized grape-vine is sufficient to raise a column of mercury 804 millimeters high, exerting in other words a pressure of about 15 pounds to the square inch.¹ That in animal tissues absorption may take place out of all proportion to, and, indeed, unaccompanied by exosmotic currents is

¹ Dr. Julius Sachs. Hofmeister's Handbuch der Experimental-Physiologie der Pflanzen, Vierter Band, Leipzig, 1865.

a fact apparent to any one who has witnessed the hard, dry stools of patients fed exclusively upon milk.

Now it would seem that the absorbents of the body possess powers, often latent, but yet capable of being exerted with almost tremendous violence. Whilst I was a student of medicine, my preceptor had under his charge a lady profoundly dropsical, who, without any adequate apparent cause, was suddenly called to the water-closet, where she spent the night, and by morning her dropsy had disappeared. A much more remarkable case, because the fluid was absorbed without any outlet from the vessels, I saw some time since with Dr. Frické. It was in the person of a man between thirty and forty years of age, suffering from albuminuria. When first seen by Dr. Frické the man was in a state resembling uræmic poisoning, semi-unconscious, delirious, but capable of being momentarily aroused by loud shouting and shaking. His wife said that twenty-four hours before he had been profusely dropsical and perfectly rational, but, without any marked increase in amount of urine passed, and without diarrhœa the serous exudation had disappeared and the cerebral symptoms come on. Under the use of elaterium the nervous disturbance rapidly subsided, and in a few days the man was able to take his place on the tailor's bench.

In a little while afterwards the anasarca, however, began to reappear, and before long his legs and genitals became enormously swollen and semi-translucent; the whole cellular tissue engorged to bursting with fluid. All this time the mental functions were perfect. Again, suddenly the dropsy disappeared in a few hours, with the same consentaneous cerebral disturbance, the same lack of increase of the excretions, and the same rapid relief from elaterium. This occurred in all three times, twice under immediate medical supervision. How to explain such a case, except by the theory that the absorbents of the body have an active power, either self-contained or dependent upon the nervous system, I do not know. I think it therefore a matter of grave suspicion whether the whole modern doctrine of endosmose and exosmose does not need some revision.

ART. VI.—*Syphilitic Diseases of the Nervous System.* By JAMES H. HUTCHINSON, M.D., one of the Attending Physicians to the Pennsylvania Hospital.

In the writings of the older authors may be found abundant proof that the dependence of many diseases of the nervous system upon syphilis was well known to them. Thus, in an edition of the work of Astruc, *De Morbis Veneris*, published in Paris in 1740, it is mentioned that Dionysius Fontana, a physician who flourished in 1526, alludes to a form of cepha-

lalgia which occurs in those who have suffered from syphilis, and to the possibility of its cure by the administration of mercury. In a translation of the same work from the original Latin into French by M. Louis, which was published in 1777, we find the following :—

“Les fonctions animales, c'est à dire, celles qui dependent des organes renfermés dans la tête, peuvent être altérées dans la verole par plusieurs causes. 1. Par des tumeurs formées contre nature, par l'exostose ou la carie de l'une des tables osseuses qui forment la partie supérieure ou inférieure du crane, par des *nodus* ou des ganglions du pericrane, ou des meninges, par des hydatids ou des tubercules des plexus choroides ; par un skirrhe de la glande pituitaire, qui est située sur la selle du ture ; *par un abces ou une tumeur gommeuse dans le cerveau,*” etc. etc. (vol. iv. p. 86).

The author then goes on to speak of cephalalgia, insomnia, vertigo, paralysis, convulsions, and even epilepsy, as occasional symptoms of syphilitic disease of the brain, or of its membranes. Paralysis, he says, may be occasioned by the nerves at their origin being bound down by lymph. Van Swieten¹ was also perfectly familiar with the fact that nervous diseases may have a syphilitic origin, for, in his Commentaries, he says, that cerebral lesions are often observed in inveterate syphilis from the mildest vertigo to deadly apoplexy, and that he has seen blindness, deafness, and the worst forms of epilepsy occur in venereal disease.

It was strange, therefore, that this fact should have escaped the observation of so distinguished a man as John Hunter, and it is undoubtedly ascribable to the influence which he exercised over his contemporaries, and over his immediate successors, that the brain was believed, until very recently, to be insusceptible of the *lues venerea*.² Still later, we find Sir Astley Cooper³ expressing a similar and still more decided opinion on this point. It is, of course, questionable whether the different forms of visceral syphilis very frequently came under the observation of either of these surgeons, and it is, perhaps, in this way that we can best explain their ignorance of a fact which was well known long before they lived.

Among the many eminent physicians who succeeded Hunter, we find a few who appear to have been cognizant of the fact that constitutional syphilis occasionally manifested itself by diseases of the nervous system. Thus, Mr. Benjamin Bell, in his *Treatise on Venereal Diseases*, mentions

¹ Van Swieten's Commentaries, Schonberg, 1774, vol. iii. p. 362.

² The passage in which this opinion is expressed is as follows :—

“But it would appear that some parts of the body are much less susceptible of the *lues venerea* than others, and not only so, but many parts are, as far as we know, not susceptible of it at all ; for we have not had every part of the body affected ; we have not seen the brain affected, the heart, stomach, liver, kidney, nor other viscera, although such cases are described by authors.”—*John Hunter's Works*, by Palmer, vol. ii. p. 396. 1835.

³ Cooper's *Principles and Practice of Surgery*, by Alex. Lee, A. M., M. D., 1843, vol. iii. p. 126.

epilepsy and headache as among the more usual sequelæ of syphilis; but the majority seem to have accepted the dicta of the great surgeon as final, and attributed to very different causes the nervous derangements of specific origin which they must have met with from time to time. In a book recently published by Mr. Thomas Reade, of Belfast, on *Syphilitic Affections of the Nervous System*, he claims to have recognized the syphilitic nature of an inflammation of the cerebral meninges, and to have cured it by the prompt administration of mercury, in 1837. Unfortunately for him, the editor of the *Dublin Quarterly Journal* refused the communication which he made on the subject, and it did not appear in print until several years had passed, when other authors had anticipated him. His book, which appeared in 1867—much of it having previously appeared in the *Dublin Journal*—contains the histories of several interesting cases. Dr. Budd reported, in the *Medical Gazette* for 1842, some cases of apoplexy consequent upon syphilis, and Dr. Inman, in the same journal for 1843, refers to a case of paralysis dependent upon the same cause. Some clinical lectures of Dr. R. B. Todd on syphilitic meningitis are also to be found in the January number of the *Medical Gazette* for 1851; but, perhaps, the best paper on this subject in the English language is to be found in the *Guy's Hospital Reports*, third series, vol. ix. The writer, Dr. Samuel Wilks, says that, in the autopsies he has made—

“The surface of the brain and membranes have been united by a firm exudation similar to that which is met with in other parts; the neighbouring bone is not necessarily affected, although this has always been the supposition until very recent times.

* * * * * The majority of cases which have come under my own notice have been of the following kind. The dura mater intimately united to the brain by adhesions of the serous surfaces, and this, not by cellular tissue, but by a hard yellow substance, sometimes of great consistence, and destroying or involving the cineritious matter, or encroaching on the medullary. In some cases the dura mater was externally adherent to the bone, and the latter was carious.”

Dr. Wilks has never himself seen “an independent, unequivocal deposit in the brain substance” similar to those which are found in the liver, kidneys, or lungs, but admits having had cases under his care in which the symptoms could only be explained on the supposition of deep-seated affection of the brain.

The exhaustive treatise of M. Lagneau, fils, *Sur les Maladies Syphilitiques du Système Nerveux*, although published in 1860, very fully represents all that is known at the present day on this subject. Besides the various affections of the bones of the cranium which are capable of producing cerebral symptoms, M. Lagneau has found in the subjects of syphilis accumulations of pus between the dura mater and the bone, or between the membranes themselves. He has also observed inflammatory exudations resembling the gummy plastic substance which is often found deposited on the

surface of bones, and sometimes thickening of the meninges. In addition to these, tumours of the brain and meninges occasionally occur, which, he thinks, we must admit to be syphilitic. These rarely attain a great size, are generally multiple, and of a firm consistence, but sometimes are soft. In most cases they will be found to have taken their origin from the meninges, but they occasionally occur in the interior of the brain substance itself. They are believed to have originated in inflammation, the products of which undergo a transformation into fibrous tissue, and resemble, to a marked degree, the fibro-plastic tumours. As there is no tissue, nor any cell element peculiar to syphilis, we are, of course, compelled to rely, to a certain extent at least, upon the history of the case before deciding as to the origin of a tumour. Instead of tumours, vegetations covering the walls of the ventricles are sometimes found, and, in a few cases, the syphilitic diathesis has occasioned extensive inflammation of the brain substance, giving rise to induration of that organ.

The lesions of the spinal cord of syphilitic origin do not differ, M. Lagneau says, from those of the brain, but it does not seem that there is the same tendency to the formation of tumours within the cord itself; and, on the other hand, softening of the nervous structure and extravasation of blood are more frequently met with.

Attention has been recently called by Dr. Allbutt¹ to the condition of the arteries of the brain in cases of syphilitic disease of the brain, and more recently Mr. Lawson Tait² and Dr. Moxon³ have met with a very similar condition. In Dr. Allbutt's case the cut ends of the carotid arteries—and a very similar condition is said to have existed in all the cerebral vessels—stood open like quills, and the basilar artery was as round as if filled with paint. They were of a whitish-yellow tint, like cartilage, stained of a salmon colour; their appearance was more uniform and their structure more like cartilage than is usually seen in atheroma. Mr. Lawson Tait says the arteritis in his case differs from the more usual forms in that all the coats of the vessels were affected. Although the arteries were apparently enlarged, they were really narrowed; for the swelling of their walls obstructed to a very great extent the blood channels. In some of the arteries clots were found.

Dr. Hughlings Jackson,⁴ who has lately written on this subject, says that syphilitic deposits are generally found on the surface of the brain, and that they begin in the pia mater and extend to the nervous mass, and generally affect the connective tissue where it is in bulk. "There is," he says, "although this is denied, connective tissue in the substance of the

¹ St. George's Hospital Reports, vols. iii. and iv.

² Med. Times and Gazette, Feb. 27th, 1869.

³ Lancet, Sept. 25, 1869, and Guy's Hospital Reports, 3d series, vol. xiii.

⁴ London Hospital Reports, vol. i. p. 152.

brain itself, but I never saw deposits unconnected with the pia mater; the reason being probably the simple one, that there is very little, if any, connective tissue in the central masses of the nervous system."

In many of the recent volumes of the *Transactions of the Pathological Society* will be found reports of autopsies in cases of syphilitic disease of the nervous system, and in some of these there is also given some account of the microscopic appearances. As these do not differ materially from those already given, I shall not refer to them more particularly.¹

The symptoms presented by cases of syphilitic disease of the nervous system will vary to some extent with the seat of the lesion; but there are many of them which simply indicate disease of the nervous system, without giving us information either as to its seat or nature. In the latter class, cephalalgia is very prominent. This is frequently very intense, as in some of the cases reported in this paper, and is very frequently mistaken for simple neuralgia. It is frequently accompanied by vertigo and dizziness, generally continues until superseded by some graver symptom, and will be found rebellious to all but a specific treatment. Hyperæsthesia or anæsthesia of portions of the body is not uncommon. Sometimes trembling of the muscles will be observed, and in some cases chronic movements and spasmodic contractions. In more severe cases we may have tetanic convulsions, epilepsy, mania, dementia, or hemiplegia. Among the symptoms indicating the seat of the disease may be mentioned paralysis of the various cranial nerves. Paraplegia, more or less complete, indicates the spinal cord as the organ affected. In many cases the paralysis comes on slowly, and this is more commonly the case when it involves only a single cranial nerve. It will be seen, on the other hand, that hemiplegia may come on almost as suddenly as in apoplexy.

The occurrence of epilepsy for the first time in an adult, where it cannot be traced to injury of the head, insolation, or any of the other more usual exciting causes, is, according to M. Lagneau, almost pathognomonic, and we should always in these cases carefully inquire into the history of the patient. On the other hand, hemiplegia from ordinary causes is rare at twenty-seven—the age of two of my patients—and its occurrence at or before this age should always arouse our suspicions.

The importance of a correct diagnosis in syphilitic diseases of the nervous system can scarcely be overestimated, especially as it must influence our treatment to a very considerable extent. It will be seen by the reports of my cases that very great improvement was effected in almost all of them by the adoption of antisyphilitic treatment, and that, in at least one instance, the patient was enabled by it to return to his work. We are justified, therefore, in making a more favourable prognosis in cases where a syphilitic history exists than in those where no such history can be elicited.

¹ Vols. x., xi., xiii., xvi., xvii., xviii., xix., xx.

It is of course to be remembered that, in many cases, even where the syphilitic origin is undeniable, that the lesion of the brain may be irreparable. In the two fatal cases reported in this paper, such a change had unquestionably occurred; but I have no doubt that the lives of both these patients might have been very considerably prolonged by the earlier adoption of systematic treatment.

The symptoms of syphilitic disease of the spinal cord do not differ from those presented by any other form of disease of that organ, and our diagnosis must rest, therefore, partly upon the existence of constitutional syphilis, and partly upon the presence of spinal symptoms.¹

The cases reported in this paper were all treated by me in the Pennsylvania Hospital during the last four years, and include all the cases of syphilitic diseases of the nervous system that have been under my care during that time. In none of these cases was there any reason to believe that either the abdominal or thoracic viscera were similarly diseased. In fact, the only case in which syphilitic disease of the abdominal viscera was diagnosticated was that of a young girl, the subject of undoubted congenital infection, in whom there were no nervous symptoms. I find it stated by Mr. Hutchinson, in his article on Syphilis in Reynolds's *System of Medicine*, that the paralyses of single cranial or spinal nerves, so common from acquired syphilis, are never met with in the inherited form. The cases were, many of them, a long time under observation. But two died in the hospital, and it is believed that all the others are still alive. In but one of the fatal cases was a post-mortem examination obtained; in the other it was positively refused by the friends, and as the physicians to the hospital unfortunately do not possess the power of forcing

¹ In a rapidly fatal case of syphilitic disease of the spinal cord, reported by Dr. Moxon in the 16th vol. of *Guy's Hospital Reports*, the principal symptoms of the disease were a sensation of "pins and needles," beginning in the feet, and extending to the groin, a progressive loss of power in the lower extremities, muscular twitchings in them, a constantly-increasing anaesthesia, and analgesia and retention of urine. At the autopsy, in the lower half of the cord several brownish or blackish patches of a size from the outline of a barley-corn to a pea were found. On section, these were found to consist of dark, tough, flaccid matter, in the centre of which lay small, yellowish, elastic, soft, gummatous spots, abrupt, and differing in consistence from the dark matter around, so that on section these yellow spots tore into semicircular form, looking like little drops of pus; yet on touching them, they were tough, elastic, and solid.

Microscopic examination in the recent state showed the dark outer zone to be composed of subfibrillated tissue, charged with refractile myelino grains; these contrasted with numerous pale nuclei scattered through the substance. The same appearance was found in the central yellowish tissue, but the elements were defaced by degeneration. There were bloodvessels in the outer zone, but the blood in some of them was changed to pigment, apparently. The soft spinal cord around showed numerous granular corpuscles, such as characterize white softening.

a compliance with their wishes in this respect, it was of necessity lost. In all the cases but one a syphilitic infection was acknowledged. In this case (IV.) there was very little doubt as to the nature of the disease from which the patient, a woman, was suffering; but in view of the fact that she had always borne an irreproachable character, she was not asked the question bluntly whether or not she had ever had a venereal sore. In all the other cases there was a distinct history of a chancre, which, except in one case, appeared to have been, so far as we were able to determine from the patients' accounts of themselves, of the indurated variety, and which was in no instance followed by a suppurating bubo, or even by a marked enlargement of the inguinal glands. In the exceptional case some sloughing of the penis and a bubo in the groin followed the infection. In many of the cases there was also a history of secondary symptoms, and in one of the cases, in which these were said not to have occurred, an examination of the eye revealed to us the presence of old iritis, and the tibiæ were found roughened with nodes.

The iodide of potassium was given in all the cases, in doses varying from five grains to thirty grains three times daily. Perhaps the best effects were obtained when the dose was ten grains. In most of the cases the bichloride of mercury was given in very minute doses, but it did not seem to have a very marked effect in any instance upon the course of the disease. Other medicines were administered only when specially indicated; but in every case the patient was ordered a good nutritious diet.

The case which I shall report first came under my care in the spring of 1868, immediately after my election to the position of attending physician to the Pennsylvania Hospital, and was, moreover, the first in which I suspected the syphilitic origin of the symptoms observed. The patient when questioned denied having had syphilis, but admitted it to the nurse in the ward, and I believe that few physicians who saw him during life had much doubt as to the syphilitic nature of his disease. It will be seen that the microscopic appearances furnish corroborative testimony to the correctness of this opinion.

CASE I.—S. S., æt. 45, admitted into the Pennsylvania Hospital March 28, 1868; ship-carpenter; intemperate; married. Has had but one child, which died of the decline. In February, 1867, after exposure to the rain, he was attacked with sharp neuralgic pains in the temples and top of the head. These pains were relieved by pressure. He was treated in a hospital at Savannah, and afterwards in one at Boston, until October, 1867, when he was discharged cured. After the lapse of several weeks the "neuralgia" reappeared; he again entered the hospital at Boston, and was again discharged cured at the end of four months. On the 26th of March, 1868, after exposure on board ship, he had an epileptic convulsion; on the day following he had another, after which he was sent by the collector of the port to the hospital. On the 1st of May I assumed charge of him. The following are the notes taken at this time: "Has had repeated epileptic attacks since admission. Each fit is preceded by the

aura epileptica, which runs from the right arm up to the right cheek. He frequently bites his tongue during these fits. Mind somewhat sluggish; articulation impaired. No paralysis of tongue. Sense of taste, and of sight in left eye, impaired since epileptic attack. Hearing has always been less acute in left ear than in right, but the difference is now increased. Since first epileptic fit, has been partially paralyzed both as regards motion and sensibility in right arm and leg. Is unable to turn over on his right side while lying in bed. Left pupil is contracted. Bowels constipated."

The patient's symptoms varied from day to day. Thus at times his intellect was extremely sluggish, at others he was sufficiently bright to give us a very connected history of his illness. The degree of paralysis was liable to fluctuations, but up to the beginning of June he was able to leave his bed to go to the water-closet. The defect of the articulation was a marked feature of the case, and was not connected with any paralysis of the organs concerned in its production, and seemed to depend to a certain extent, at least, upon a loss of the memory of how to say words, or, in other words, there was present a slight degree of ataxic aphasia. Convulsions occasionally occurred, but they were less frequent than before.

The following record of his respirations, pulse, and temperature may be of interest:—

June 8, P.M.	Pulse, 78	Respiration, 36	Temperature, 101 $\frac{2}{3}$
" 9, A.M.	" 76	" 28	" 98
" 9, P.M.	" 72	" 28	" 99 $\frac{2}{3}$
" 10, A.M.	" 72	" 24	" 98
" 10, P.M.	" 74	" 28	" 100 $\frac{1}{3}$
" 11, P.M.	" 68	" 24	" 100 $\frac{1}{3}$
" 12, A.M.	" 68	" 26	" 97 $\frac{2}{3}$
" 13, P.M.	" 84	" 30	" 97 $\frac{2}{3}$

"On the 30th of June there is incontinence of urine and of the feces. Is fed. No difficulty in swallowing. Is unable to move himself in bed. Paralysis has now developed itself on both sides, and is increasing. Understands all that is said to him. Endeavours to answer questions, but while the lips perform all the requisite motions, he is unable to utter an articulate sound." After this, the progress of the case became more rapid, and on the 12th of July death took place.

Post-mortem examination five hours after death.—Calvarium unusually thick and heavy; brain diseased, principally on the left side. At the supero-lateral part of the middle lobe of this hemisphere the dura mater was thickened and lightly adherent to the surface of the brain. Under this part there was a firm tumour imbedded in the nervous substance. This mass was about one and a half inch long by three-quarters of an inch wide, irregularly oval in shape, and extended into the brain about one inch. The nervous tissue was softened almost to a creamy consistence for at least one inch around the growth. Upon laying open the brain, no marked congestion of its substance was noted; the ventricles contained a normal amount of serous fluid. The softening around the tumour involved the outer lamina of the left corpus striatum to a moderate degree, the microscope revealing here a disintegrated condition of nerve-fibrils and a few granule-cells. There was also a small patch on posterior lobe of left hemisphere, where the dura mater was adherent and where the outer lamina of the brain was indurated as apparently from the organization of plastic material in it. This patch was also stained of a yellowish-red colour, in consequence of capillary ecchymoses. There was also a small patch of softening in the right anterior lobe, over which the dura mater was adherent, situated about

half an inch from the median fissure and one inch above the orbital border. There were in places at the base patches of organized lymph; the left oculo-motor nerve was imbedded in it; and the optic chiasm was bound down by false adhesions. All other parts of the brain appeared healthy.

The microscopic examination, which was made by Dr. William Pepper, showed a dense fibrous stroma, with numerous small round nucleated cells; in places much granular fatty matter was present, from incipient softening of the mass; numerous large vessels and capillaries were found traversing its structure. Liver was cirrhotic. Spleen double the normal size.

The next case which I shall report was unmistakably of syphilitic origin, the infection being fully admitted by the patient, and the history of the disease being that of constitutional syphilis. The patient was under treatment at the Pennsylvania Hospital for upwards of two years, and I will present merely a brief abstract of the notes taken during that time.

CASE II.—James S. L., æt. 23, admitted August 5, 1868; a native of Nova Scotia: sailor. No hereditary taint. In 1866 contracted a chancre, which was accompanied by some sloughing of the glans penis, but did not give rise to enlargement of the glands in the groin. Soon after, had sore-throat and iritis, and, while recovering from these, an eruption of rupia appeared on the legs; when this had yielded to treatment, his health seems to have been fully restored, and to have remained good until May, 1866, when he sailed for Surinam, and while there had a convulsion which was followed by loss of power over the left side. During the voyage home he had no convulsions, but suffered a good deal from a large bed-sore over left trochanter. On admission, had no headache, no numbness about mouth or tongue, no absolute loss of sensation, but total loss of motion in left arm and leg. Left arm strongly flexed; attempts to extend it give pain. Sight and hearing good. Reflex movements absent in leg. Face drawn to right side. Is unable to whistle. Pupils normal, and act well under light. Right thorax expanded rather more freely than left. No physical sign of disease, either of the heart or lungs. Was pale, emaciated, and cachectic-looking. Temperature normal. Left foot everted. Mind dull, but he could be roused to answer questions intelligently. The electro-muscular contractility on paralyzed side was almost entirely lost, and the electro-muscular sensibility very much impaired. He was placed upon the use of iodide of potassium gr. v, and of the bichloride of mercury gr. $\frac{1}{4}$ t. d. Under this treatment there was slight improvement in some of the symptoms, but the paralysis continued complete, and on November 30 the half of a grain of oxide of silver was substituted for it, and continued until the middle of December, when the patient had a severe convulsion, which was followed by unconsciousness, stertorous breathing, and widely dilated pupils. After recovery of consciousness, he was found to have bitten his tongue. Later he was ordered hypodermic injections of $\frac{1}{60}$ of a grain of sulphate of strychnia three times daily. Improvement in the nutrition of the paralyzed muscles and an increase in their electro-muscular contractility followed the use of these. During the remainder of December he had but one more convulsion. In January, 1869, he had two, and after this they became more frequent, but did not increase in severity. On the 5th of February the intelligence and nutrition are noted as having im-

proved; urine yellow; sp. gr. 1026; reaction neutral; deposit consisting chiefly of vesical cells; muscles of left arm respond freely to battery. Hypodermic injections of strychnia to be continued. On the 22d he was slightly delirious, and the hypodermic injections of strychnia were discontinued. At the end of my term of duty there was no marked change in his condition.

On the 1st of February, 1870, I again took charge of him. At that time I was particularly struck with the improvement in his intelligence, which was manifested not merely by the greater clearness of his answers to questions, but also by the fact that he spent much of his time in reading. Convulsions had become frequent and were brought on by movement, as, for instance, when he is moved from one bed to another. Paralysis still continued almost complete, but had slight power over the muscles of the shoulder and hip. During the year he took cod-liver oil, and iodide of potassium in doses of gr. xxx, t. d. On the 7th of May the patient again passed from under my control, and there was at that time very little improvement in his condition to note. He had no control over the sphincters of the anus and no sensation at the time of having a passage.

He was sent to Nova Scotia by the British consul, Sept. 13, 1870.

The next three cases present many points of similarity to Case II., and were all in the wards at the same time.

CASE III.—J. L., æt. 27, admitted March 3, 1870; Irish; single; laborer. The following notes were made at the time of his admission, and during the time I continued in charge of him.

Six years ago, had an indurated chancre, which healed in three weeks. No bubo and no secondary symptoms were observed. No cicatrix in the groins. Has had a severe headache for the last ten weeks, and for the last ten days dizziness. The pain was principally seated in the left temple, but sometimes extended over the forehead to the right temple, and still more rarely was complained of in the back of the head. Has had occasional nausea, and there has been for some time slight impairment of sight. On the night of the 2d he went to bed well, but upon awaking at 5.30 the next morning, he found that there was slight loss of power on the right side; at 7 A.M. he could walk only with help; and at 9 A.M. was completely paralyzed on the right side. A few hours later he was received into the hospital.

When admitted there was complete hemiplegia, but no paralysis of sensation; no paralysis of sphincters; urine had to be drawn off; slight ptosis, and internal strabismus of right eye, together with anæsthesia of its mucous membrane. He was able to close both eyes simultaneously, and to close the left eye without shutting the right, but could not close the right eye alone; tongue deflected to right side; lips and face drawn in smiling to left side; left side of thorax much more expanded in inspiration than the right side; muscles of palate unaffected. Fifteen grains of iodide potassium were ordered three times daily.

The progress of the case was very satisfactory, for on the 24th the ptosis and strabismus were both very much diminished, and the patient was able to move his leg slightly; and on the 24th of April was able to walk about the wards. On the 7th of May the case passed into the care of my colleague, Dr. J. A. Meigs, at which time the following note was taken. "Is still unable to whistle; has little power over the right arm;

cannot open his hand, but can move the arm at the elbow; there is a tendency to contraction of the fingers; there is no longer strabismus of right eye; pain in head still continues, but is somewhat relieved by smearing the forehead with the ointment of belladonna. Is now taking minute doses of corrosive sublimate."

The history of syphilis might be considered incomplete, had we not discovered, shortly after the admission of the patient, that there was marked evidence of previous iritis of the right eye, the pupil being irregularly dilated (its shape was somewhat pyriform, the long diameter being horizontal). The ophthalmoscope, moreover, reveals the presence of adhesions. The tibiae were tender on pressure, and the seat of nodes.

CASE IV.—S. H., æt. 40, admitted March 8, 1870; American; single; domestic. In April, 1861, she was under treatment in the hospital for acute periostitis. After being in the medical wards, she was transferred to the surgical ward, where she was operated upon for a stricture of the rectum. She suffered from constant dizziness, which she said was always in the left side of the head, during the four weeks preceding her admission to hospital, and from dimness of vision for about a year. While washing her face one evening, a few days before admission, she suddenly found that she could not speak, and that she could move neither the right leg nor hand. At the time of admission, the loss of power was complete in whole of right side; sensation not affected; reflex movements in right leg; tongue protruded towards the right side; mouth drawn to left side; ptosis of right eyelid; no loss of sensibility of mucous membrane of right eye. There was enlargement and roughening of the spines of both tibiae, and great tenderness to the slightest pressure in both legs, but especially in the left. There was also great indistinctness of articulation, and difficulty in swallowing. Although the patient is evidently of a very nervous temperament, it is apparent, both from her history and a careful consideration of her symptoms, that the paralysis is not of hysterical origin. The association, also, of difficulty in articulation with right-sided paralysis, renders it still more difficult to believe that the loss of power is simply a manifestation of hysteria. She was ordered fifteen grains of iodide of potassium, with twenty minims of the syrup of the iodide of iron, three times daily.

On the 8th of April she was discharged, very much improved, being able to walk a short distance without help, and to use her hand slightly.

It is to be regretted, of course, that we have not in this case a distinct history of syphilis, or even of a chancre; but I have already given my reasons for not putting the question plainly to her, whether or not she had ever had syphilis. The periostitis, however, which was symmetrically developed, and gave rise to marked thickening of the tibiae; and the stricture of the rectum seemed to me to furnish satisfactory evidence of the syphilitic nature of the disease—evidence which was rendered still more complete by the result of the treatment. It is to be remarked, too, that while the woman was recovering, she did not drag her leg, as is the case when the paralysis depends upon hysteria; but in walking, supported herself upon the sound limb, while the paralyzed limb described a semicircle.

I have some hesitation in reporting the next case in this place, as there is no evidence, except that he had a sore on his penis four years before he came under observation, which was exceedingly slow in healing,

that the patient has ever had syphilis. The manner of attack and the symptoms bear such a close resemblance to those presented by Case III., and so much improvement followed the administration of the iodide of potassium in large doses, that I have determined to include it in this paper—admitting, however, that it is a doubtful case.

CASE V.—J. W. E., æt. 27, admitted March 1, 1870; Irish; single; carpenter. About four years ago, had a chancre on the head of his penis; does not know its character; it remained unhealed for three or four months; does not know whether or not it was accompanied by a bubo; has never had secondaries; there are no nodes on tibiae; has had serofulous cicatrices on chest since childhood, also on neck. The cervical glands became enlarged about six months after the chancre was contracted, and subsequently discharged pus for about one month. Has not been subject to headache, nausea, and giddiness; sight of right eye good, that of left was destroyed some years ago by a nail striking it.

Paralysis of left side of body came on on the 12th of last September. On the afternoon of that day, while walking in the yard attached to his house, he suddenly felt as if he could not stand, and had to be assisted back into the house. Complete hemiplegia immediately ensued, without loss of consciousness. On the day of the attack, and on the one preceding it, he had severe headache for the first time. Shortly after this seizure he was cupped and blistered, which relieved his headache, but produced no perceptible improvement in the paralytic symptoms.

At the time of his admission he was able to walk with a cane, but there was still paralysis of the arm and of the face. There was, however, no ptosis and no strabismus. The fingers have a tendency to contraction. Improvement followed the use of iodide of potassium in ten-grain doses, three times a day.

I have unfortunately preserved no notes of the next case, and shall therefore be obliged to draw upon my memory to supply their place.

CASE VI.—E. N., æt. 26, admitted September 11, 1869; American; clerk. Contracted a chancre some years ago, which was followed by well-marked evidences of constitutional infection; his legs were covered with the cicatrices of rupia. When admitted he was thought to be affected with locomotor ataxia, from the resemblance which some of the symptoms presented to those of that disease, especially the irregularity of gait and the defect of vision. But upon closer observation, his manner of walking was found to differ from that which is so characteristic of locomotor ataxia, and to consist chiefly in a swaying backward of the body at every step, the heels being put down first, and generally with some force. There was loss of power on the whole of the right side. The strength of the patient's grasp was materially diminished on that side. The left pupil was much more dilated than the right, and was more sluggish in its movements. No marked alteration in the sensibility on the right side, and no impairment of the intelligence was observed, although he was liable to attacks of drowsiness. Slight difficulty of articulation existed. There was no history of a convulsion previous to his admission, but on one occasion he is said to have fallen down while at work, and to have been insensible for a short time. After this paralysis of right side developed itself. An ophthalmoscopic examination made by Dr. J. C. Wilson showed the pre-

sence of retinitis pigmentosa. Decided improvement followed the administration of the iodide of potassium, and he was about to return home when, without premonitory symptoms of any kind, except perhaps increased drowsiness, a convulsion occurred, which left him entirely paralyzed on the right side. Other convulsions followed, and he finally passed into a semi-comatose condition; the left arm, and to a less extent the left leg, continuing to be affected almost constantly with convulsive movements. There was apparently also paralysis of the œsophagus, so that food and medicine had to be administered to him by the rectum. An attempt was made to inject the iodide of potassium subcutaneously, but it gave rise to so much local irritation that it was abandoned.

Death took place on February 23, 1870, about four days after the first convulsion. Unfortunately no post-mortem examination was permitted by his friends, and we can therefore only speculate as to the nature and seat of the lesions. There can be but little doubt that there was a tumour seated on the left side of the brain, probably superficially, not far from the third frontal convolution. It is also probable that there was disease of the spinal cord.

The next case presents a good deal of resemblance to the preceding one, especially in the peculiarity of the patient's gait. There is, however, no reason to suspect the existence of a tumour of the brain, the disease affecting principally the spinal cord, and we have every reason to believe that he will ultimately recover.

CASE VII.—Adam W., æt. 46, admitted December 1, 1870; American; widower; plasterer. Contracted a chancre in November, 1865, which was not followed by a bubo, by a papular eruption, by iritis, or by any of the usual immediate evidences of syphilitic eruption except sore throat. Two years ago had an eruption of rupia, which has left well-marked cicatrices over both tibiæ. Soon after the healing of the ulcers left by the rupia he began to suffer from dizziness, especially marked when rising from a recumbent or sitting position to the erect one, and has occasionally fallen in consequence of its intensity; but he says that at these times he did not lose consciousness, and that he has never had a convulsion. On March 11th, while plastering the fronts of some white houses, he was suddenly seized with extreme dizziness, which obliged him to abandon his work, and from that day he dates the beginning of the irregularity in his gait which is so marked a feature in his case. It is difficult to describe this; it resembles to some extent that seen in locomotor ataxia, but differs from it in certain respects. In walking, the patient waddles slightly, the feet are separated and raised with a jerking motion, especially the right one, but are not thrown outwards as in locomotor ataxia. The body sways backwards and slightly to the left at every step, which is probably due to the fact that the heels are put down before the toes. There is more of stiffness than of uncertainty in his movements. His gait becomes more uncertain when he shuts his legs, and he cannot stand steadily when his feet are placed close together, and staggers if he attempts to turn round suddenly. There was, earlier in the history of the case, great numbness of the legs, as he calls it, and it is probable that both anæsthesia and analgesia were present. He suffers at times, less frequently now than formerly, from involuntary contractions of the muscles of his legs and thighs, and these are felt both while he is at rest and while he is walking.

During the past two years he has had no sexual appetite, but this is now returning. There is very little impairment of vision and no prominence of the eyeballs, nor irregular or unequal dilatation of the pupils. He says he is slightly deaf in the right ear, but that this has been the case for several years. Memory good. Intelligence not impaired. No disease of any of the thoracic or abdominal viscera. Discharged much relieved, March 13, 1871.

The next case is one in which the symptoms were not nearly so aggravated, and in which, from the similarity it presented to a case reported by Dr. T. Clifford Allbutt, in the *St. George's Hospital Reports*, I was inclined to think there might be syphilitic arteritis. The patient improved very much under the use of iodide of potassium together with a small quantity of the bichloride of mercury, and did not remain long under treatment, but has occasionally presented himself at my office for advice, whenever there is an indication of a relapse, and is always benefited by the medicines above mentioned.

CASE VIII.—Henry B., æt. 25, admitted March 24, 1869; American; formerly an ironmonger, now a horse-dealer. Had a chancre three years ago. No lymphatic adenitis. Had an eruption on his legs about one year after inoculation, which lasted six or eight weeks. About nine months ago he noticed a slowly progressive loss of power on left side. Muscles of affected side are well nourished. Tactile sensibility unaltered. Ulcerations on leg apparently of syphilitic origin.

In conclusion, I will allude to the case of a coloured man in whom there was some reason to believe that epilepsy had been set up in consequence of syphilis, but as there was also a history of sunstroke, and none of secondary symptoms, I have determined not to include his case in this paper. I may add that there was no great improvement after the administration of iodide of potassium for a month.

ART. VII.—*Pemphigus Produced by the Administration of Iodide of Potassium.* By FREEMAN J. BUMSTEAD, M.D., Clinical Professor of Venereal Diseases at the College of Physicians and Surgeons, New York.

THE following case, the first of the kind I have ever met with, deserves, from its rarity, to be placed on record.

W. F., aged 28, Irish, entered ward 10, Charity Hospital, December 21, 1870. His venereal history, as given by himself, was imperfect. He acknowledged having had gonorrhœa eight years ago, and again six years ago, but denied having had any sores upon the genitals, or any of the ordinary early secondary symptoms of syphilis. Fourteen months ago he began to suffer from "swelling of the feet and pains in the tibiae, felt

chiefly at night." Last February, ecthymatous ulcerations made their appearance upon the legs, and one was situated over right patella; it was for these that he sought admission to the hospital. The interne of the ward prescribed for him, on December 23, a mixture containing twenty grains of the iodide of potassium, to be taken twice daily.

On the evening of the following day, after having taken only three doses, the patient complained of heat, and a burning sensation in his face and hands, which were observed to be reddened, and the medicine was at once discontinued.

I saw him for the first time on the afternoon of the next day, December 25, and found him in a decidedly cachectic condition, with small purpuric spots thickly covering his feet and the lower portions of his legs. But the eruption to which I desire to call attention, and which had made its appearance since the evening before, was one of very large bullæ, some of them an inch and a half in diameter, situated upon the back of the neck, the forehead, the face, and upon the backs of the hands—in other words, upon those portions of the integument which were exposed to the air. Some of these bullæ were filled with a clear serum, others were turbid, and of a reddish or purplish colour from the admixture of blood, while the skin around them was somewhat reddened and oedematous. In the course of a few days, most of them had become ruptured and were drying and disappearing.

In evidence of the fact that this eruption was produced by the iodide of potassium, the patient reported that on three previous occasions during the last year he had taken the iodide at the recommendation of different physicians, and always with the same unpleasant result. After the disappearance of the eruption he has felt better, and his syphilitic symptoms have improved.

I have since learned from my friend, Prof. B. W. McCready, M.D., that the case was under his care on one of the occasions referred to, that the patient took iodide of potassium, and Prof. McC. describes the ill effects as the same as in this instance.

I have searched in vain for any allusion to a bullar eruption due to iodide of potassium, in most of the works upon the subject within my reach.

Dr. H. E. Fischer, of Vienna, who wrote a special article on the eruptions produced by the iodide of potassium (see *L'Union Médicale*, Jan. 31, 1860, from the *Wien Medicin. Wochenschrift*), does not mention it.

So far as I know, it is only referred to by Boinet (*Iodothérapie*, 2d ed., 1865, p. 68), who states that Cazenave has seen "eruptions of bullæ filled with sero-sanguinolent fluid, which are readily torn, and which may be followed by ulcerations difficult to heal."

In this instance, I suspected that the miliary eruption of purpura which I observed upon the feet and legs, was also due to the iodide, but the patient was confident that it had existed for a long time.

ART. VIII.—*Autopsy of a Case of Mania.* By A. M. SHEW, M. D., Superintendent of the General Hospital for the Insane, Middletown, Conn., and E. C. SEGUIN, M. D., of New York, Pathologist to the Institution.

Mania; granular degeneration of ventricles; cortical sclerosis of cord.—S. S., æt. 43, married, Can., stonecutter, admitted July 10, 1870. First symptoms noticed two months ago. Had a slight fit, which was followed by symptoms of subacute mania. He steadily grew worse and became unmanageable at home, on account of violence towards family and others. At times has been rational, but most of the time incoherent; having delusions in regard to being a policeman, owning livery stables, etc. Previously to his having this "fit" he was thought eccentric.

August 9. Has had no active symptoms until to-day, when he became delirious and required restraining in bed.

Sept. 1. Is up and about ward as usual, though he seems more stupid and irritable.

20th. Transferred to the "Excited Ward" on account of a growing disposition to molest other patients. Imagines that they call him bad names, etc. Patient is somewhat deaf.

Oct. 10. General health failing. Is taking tonics and stimulants. Soils clothing and bed.

Nov. 1. Did not seem to recognize his wife, who visited him two or three days ago. Frequently suffers from colic.

11th. At 6 o'clock A.M., was discovered in a "fit" by the attendant. The "fit" seems to be apoplectic. Has stertorous breathing; flushed countenance; pulse 132, and very strong, carotid arteries beating violently; pupils contracted and not responsive to light. No reflex movements of limbs produced by tickling feet. When first seen by attendant arms were jerking. No evident paralysis of any of the limbs. At 6 o'clock P.M., no material change. Has occasional spasmodic movements of arms, and spells of jerking, and irregular breathing. Sweats profusely, and passes large quantities of urine.

12th. A.M. Pulse not as strong. The paroxysms of irregular respiration continued through the night. No other change. Noon. Breathing more regular; pulse better; pupils respond to light; he makes attempts to swallow. Ordered some stimulants. Is sensible to pain of pricking and pinching. Right side apparently more sensitive than left. Temperature normal. 6 o'clock P.M. Swallows whiskey and water, though with some difficulty. Pulse 100.

13th. Apparently better. Takes milk-punch and beef-tea with less difficulty in swallowing. Respiration more regular. 5 P.M. Is about as in A.M. 7 P.M. Reported in a dying condition. Death took place at 9 P.M.

Autopsy.—Body examined twelve hours after death; weather cool. Rigor mortis moderate and universal. Some hypostatic congestion of skin of back and limbs. Small bed-sore formed over sacrum.

Spine and contents.—Fat next to dura mater injected. But little fluid under arachnoid. Dura mater and arachnoid appear perfectly healthy: there being a few filamentary adhesions between the two in region of cervical enlargement, posteriorly. On the anterior surface of spinal canal, there is found a small tumour, the size of a large pea, situated in the substance of the posterior common ligament, opposite the fibro-cartilage

lying between the last dorsal and first lumbar vertebræ. It pushes the dura mater somewhat forward, but not enough to have produced any pressure on cord. The tumour is fibro-cartilaginous. On making sections through different parts of the cord, no abnormal appearance is discernible to the naked eye, except a very unusual development of vessels in the gray matter and near the anterior fissure. Spinal cord is placed in Müller's fluid for transportation.

Skull and contents.—Bones and dura mater normal. Pacchionian bodies unusually numerous. The arachnoid is not perfectly transparent along vessels, but the milkiness is hardly pathological. A minute inspection of the entire external surface of the cerebrum fails to reveal any lesions. The pia mater everywhere peels off well. On section, the gray matter of the convolutions appears unusually dark. The centrum ovale majus is much injected. Opto-striate bodies normal.

The ventricles are the seat of a very interesting lesion. In the first place, they are all considerably dilated, and contain a good deal of clear fluid.

Secondly.—The floor of the lateral ventricles, half way up the lateral boundary, appears granular and thickened. The granulations, easily felt and seen, are translucent, pearl-like, and vary much in size, from a mere point to the bulk of the head of a small pin. On passing the fingers over the diseased tissue it appears unusually firm. The third ventricle and infundibulum are considerably enlarged, and studded with granulations; the same being true of the aqueduct of Silvius. The foramina of Monro measured nearly one-quarter of an inch in diameter, and the lesion involves them, as well as the septum lucidum. The roof of the ventricles is normal; and so are the choroid plexuses.

Cerebellum appears perfectly normal: but the valve of Vieussens is the seat of the granular degeneration above described. Medulla oblongata appears healthy to naked eye, except that floor of fourth ventricle to the apex of the calamus scriptorius exhibits the granular degeneration; though to a less degree than the lateral and third ventricle. Nerves at base of brain appear normal.

Thorax and contents.—Heart normal, contracted; commencing atheroma of arch of aorta.

The lungs do not fully collapse on exposure. Left lung presents some recent adhesions of its lower part with costal pleura; no fluid. The lower lobe is hepatized, and presents a number of patches of commencing resolution; pieces sink in water. Lower part of upper lobe slightly congested; at apex there is a wrinkled cicatrix the size of an almond, underneath which lies a cretaceous mass as large as a pea, with tubercular(?) granulations, somewhat smaller, imbedded in the lung tissue around it, in a zone one inch in diameter. Right lung exhibits only extreme congestion and œdema of upper and lower lobes; the middle lobe being normal. No trace of tubercles in this lung.

Abdomen and contents.—The stomach is the seat of considerable ecchymosis along the lesser curvature, and there are traces of this in the large cul-de-sac. Kidneys of usual size; capsules peeling off normally. Cortical portion of right kidney is, perhaps, a little pale.

Liver, spleen, and intestines healthy. Some urine in bladder; is not albuminous.

Microscopical Examination. Spinal cord.—After hardening in a dilute solution of chromic acid, sections were cut horizontally from differ-

ent regions of the spinal cord, and prepared by Clarke's method. That is to say, the cuts were stained by a neutral solution of carmine, soaked in alcohol, transferred to absolute alcohol, floated on oil of turpentine to give transparency, then mounted in Canada balsam dissolved in chloroform. The following is the result of the study of these sections in order, beginning above, with a power of one hundred diameters.

Section No. 1, made in the decussation of the pyramids. Circumferential layer of reticulum is perhaps a trifle heavier than usual, as are some of the trabeculæ running inward from it. The central canal is very small, but not altered; and no lesion is evident in the white or gray substances.

Section No. 2, made 3 c. below decussation. The increased thickness of the circumferential part of reticulum has become very decided, and constitutes a cortical sclerosis. The framework is denser, and secondarily the nerve fibres near the edge of the section are atrophied in large numbers; many bearing but a very small quantity of myeline around the axis cylinder, many others being apparently reduced to the latter element; the growth of the new fibrillar tissue having, as it were, strangulated them. The anterior fissure is widely open, the vessels running into it are abnormally large, and at its bottom, near the anterior commissure, there is a moderate amount of homogeneous effusion in the folds of the pia mater outside the vessels. On the left side, the anterior commissure is invaded, and somewhat broken down, by a dilated vessel with effusion of the same homogeneous material outside of it; in a manner precisely similar, though less in extent, to what exists in Section 4. The central canal is normal, but its cavity contains a quantity of the homogeneous effusion.

Section No. 3, made through the upper part of the cervical enlargement. The cortical sclerosis has diminished, but is still very evident and uniform. Near the bottom of the anterior fissure lies a dilated bloodvessel, and still deeper a quantity of homogeneous effusion, destroying, in great part, the left anterior commissure. There is also a want of symmetry between the anterior horns, the right being shorter, and looking a trifle more inward, than the left. The central canal is small, but normal.

Section No. 4, made through the middle of the cervical enlargement. The cortical sclerosis has again increased, and is greatest in posterior and lateral portions of the section. At the external end of the anterior fissure, there has been much increase of the connective tissue of the pia mater. With a higher power (300 diameters), this structure may be seen sprinkled with numerous nuclei, evidences of inflammatory irritation. This multiplication is especially marked round about the vessels of the anterior fissure, and in their adventitious coat. A narrow strip of pia mater extends from this part to the inner end, or bottom, of the anterior fissure, where it again expands, rich in nuclear elements, and bearing abnormally large bloodvessels, whose walls are decidedly thickened, and whose cavities are crammed with red blood corpuscles. In the middle, resting against the anterior commissure, in the midst of the connective tissue, is a mass of effused material, appearing homogeneous under a power of 100 diameters. From the pia mater, at the bottom of the fissure, there extends a new formation of fibrillar tissue filled with nuclei, inclosing bloodvessels, which has quite destroyed the left branch of the anterior commissure; the pathological product extending into the gray matter and posterior commissure. At the place of contact of the fibrillar tissue and the gray commissure, is another mass of homogeneous effusion. There is more or less condensation of tissue round about the central canal, the cavity of which contains

a homogeneous material of same aspect as that found elsewhere. The invasion of the left anterior commissure by the diseased pia mater has produced a striking deformity in the white and gray matters of that side. The left anterior column is shortened, and rounded off below; the inner boundary line of the anterior horn is apparently shortened, and is thrown inward, so as to appear quite parallel with the anterior fissure. About one-fourth of the so-called posterior fissure is dilated, and the resulting space contains a thickened process of the pia mater, probably itself conveying an enlarged bloodvessel.

Section No. 5, made through the middle of the dorsal region. The cortical sclerosis continues marked, though less than in No. 4. At the bottom of the anterior fissure is some homogeneous effusion, but the commissure is intact. There is seen, back and to the left of the central canal, in the posterior commissure, an opaque red spot, contrasting sharply with the adjacent tissue, of an oval shape, measuring .21 by .13 mm.; evidently a spot of sclerosis. The central canal is here very large, .5 mm. by .15 mm., irregularly quadrangular in outline, and is filled with homogeneous effusion.

Section No. 6, made through the middle of the lumbar enlargement. Cortical sclerosis moderate; exaggerated near points of exit of posterior roots. The anterior fissure and contained parts are very nearly normal; anterior commissure intact. The central canal appears as a slit running antero-posteriorly, one of its sides formed by tolerably distinct epithelium, the other broken down; and the lumen contains *debris* of epithelial elements. No trace of effusion outside of vessels.

Section No. 7, made at a point about 2 c. above end of cord. Shows very great cortical sclerosis, which is, however, quite uniform. Anterior fissure not much involved; it contains no effused matter. The central canal is represented by an ovoid mass of epithelial *debris*. The external layer of the reticulum, and the trabeculae running inward from it, are immensely hypertrophied, and show, under a higher power, a distinct fibrillar structure. The nerve-fibres are consequently atrophied, and very few exhibit an envelope of myeline; the immense majority are indicated only by the round, nucleus-like body, the axis cylinder. Besides these, there are very numerous nuclei, belonging to the diseased reticulum. Beyond the external layer of reticulum are seen two fragments of pia mater, much heavier than normal, and showing nuclei.

Section No. 8, made at a point 1 c. above end of cord. The cortical sclerosis is here very considerable, the pia mater being remarkably thickened. The sclerosis is especially marked at the external end of the anterior fissure. In the fissure itself there is thickening of the pia mater, enlargement and thickening of bloodvessels; and around these there is some effusion more granular than that occurring higher up, and of a yellowish hue. Opposite the posterior fissure the sclerosis is much less intense; but it is again greater over the lateral columns. Around the central canal there is some slight condensation of tissue, the epithelium is fairly preserved, and there is no effusion in the cavity. The effusion which has been seen in so many sections, lying in the anterior fissure, or occupying the lumen of the central canal, appears quite homogeneous, and of a uniform reddish hue, under a pressure of 100 diameters. With a power of 340 diameters, we thought that in a few places we could make out indistinctly the outlines of red blood corpuscles. We consequently, though with reservation, consider the effusion as hemorrhagic.

In none of the many sections examined was any alteration of the nerve-

cells of the gray matter discovered. In some sections the gray matter was seen to contain abnormally large vessels filled with blood.

The state of the spinal cord may be stated in a few words, as follows:—

The organ is in a state of inflammatory irritation, characterized by thickening of the pia mater, multiplication of its nuclei, and formation of new fibrillar tissue in the anterior fissure in various parts of the cord, mainly in the upper cervical region and in the lower portion of the lumbar enlargement. This morbid state of the pia mater is accompanied everywhere by enlargement of bloodvessels and by thickening of their external coat; in many places, besides, by rupture of small vessels, leading to effusion of blood in the bottom of the anterior fissure throughout the upper cervical region. In some places the central canal is occupied by a similar effusion. In the upper cervical region for several c. the left arm of the anterior commissure is broken up by a pathological product made up of enlarged vessels, new fibrillated tissue derived from the pia mater, and by hemorrhagic effusion. Throughout the cord there is marked cortical sclerosis. This sclerosis, most marked in the upper and lower portions of the organ, has resulted, firstly, in the production of a mass of fibrillated tissue containing numerous nuclei, and, secondly, in consecutive atrophy of the nerve-fibres lying in the meshes of the reticulum near the periphery. In the gray matter, traces of the irritative process are to be found in the shape of condensation of the tissue round about the central canal, of enlarged bloodvessels, and of one nodule of sclerosed reticulum.

Medulla Oblongata.—We have been as yet unable to study the state of this part in a thorough manner. Sections made at a point .5 c. above the end of the calamus scriptorius present the following points:—

The pia mater is somewhat thickened, and contains numerous nuclei. The floor of the ventricle is studded with granulations, most abundant and largest in the situation of posterior median fissure, having the same fibrillated structures as those found on the lateral and other ventricles, a minute description of which will be found below.

The nuclei of the hypoglossal nerves, and the cells of the restiform bodies, are normal; but a little to the outside of and above the hypoglossal nuclei, there are seen six or eight nerve-cells in various stages of granular degeneration. Some of them are mere masses of yellow granular pigment. These cells belong to the nuclei of the spinal accessory nerves. The vessels of many parts of this nervous centre are very large, and nearly all crammed with blood-corpuscles. In and about the hypoglossal nuclei, vessels measuring .15, .1, .06, 0.5 mm. in diameter are found; in the restiform bodies, vessels .05 mm. in diameter; and in one section the central part of the left olive exhibits a cavity which must have inclosed a vessel measuring .3 mm.

Ventricular Surface.—We come now to the study of the most interesting lesion of the case, viz., the granular degeneration of the general ventricular surface. We shall describe the lesion as it appeared in sections cut from the floor of the lateral ventricle perpendicularly to surface, prepared and mounted according to Clarke's method.

(a.) On viewing such a section with various powers the following points are ascertained: The deeper parts of the section exhibit the nuclei of neuroglia in normal numbers, and the ordinary number of bloodvessels, around which there is a moderate deposit of yellow granular matter, this being the only abnormal appearance. Next, immediately underlying the epithelium, is a layer of condensed tissue, contrasting quite sharply with that

above described, and measuring, on the average, nearly .5 mm. in thickness. At several points, in the neighbourhood of bloodvessels, this condensed tissue penetrates deeper into the normal brain substance. These vessels, in the condensed layer, and in the parts immediately below, are abnormally large, filled with blood-corpuscles, and their coats are evidently thickened. The upper free (epithelial) edge of the section is quite covered with projections, these being sections of the granulations whose appearance to the naked eye has already been described. These sections vary much in outline and in size. Some present a distinct terminal nodule or head, others are cut off squarely, a few are pointed, and many are rounded. They range in height from a mere nothing to nearly .2 mm. The majority of the granules appear opaque, and the opacity extends somewhat, and in various shapes, into the subjacent tissue. In some places nothing is visible but a nodule of darker appearance than the surrounding parts, and not actually projecting through the limiting line of the section.

(b.) On viewing one of the non-projecting nodules with an objective magnifying 340 diameters, it is evident, at the first glance, that the epithelial lining of the ependyma remains over the entire nodule, in a better or worse state of preservation: in some places the nuclei of the epithelial cells can be distinctly seen. In reality there are here two nodules lying very near each other, a larger and a smaller one, and in the depression between the two, a certain amount of disintegration has occurred in the epithelial layer. The nodules themselves appear made up of a confused mass of delicate fibrillar tissue; the parts underlying the nodules being made up of similar fibres nearly horizontally disposed. The nodules appear separated from the other tissue by a tolerably sharp outline; and no cellular elements are visible beneath the epithelium.

(c.) Examining one of the large, projecting granulations we see that there is, as above described, a fibrillated substratum, horizontally disposed. The epithelium is preserved on the limiting line of section on either side of the granulation, and also for a short distance upon the granulation itself. The granulation, made up of fibrillated tissue, the fibrils of which are disposed perpendicularly to the edge of the section, projects in such a way through the remains of epithelium as at once to suggest that the growth has burst through the once continuous layer of epithelial elements. Its free edge is made up of delicate fibres, and among these are seen the outlines of oval nuclei. In the deeper parts of the granulation the fibrillation is more confused, and the nuclei are no longer distinct.

(d.) The examination of a minute granulation at its free edge shows a number of peculiarly shaped cells, containing very large granular nuclei, and having dissimilar ends; one narrow and thread-like running down into the granulation, the other free, rounded, or squared off. A number of analogous cells appear faintly outlined in the projecting part of the granulation below its free edge. These peculiar bodies are most probably altered epithelial cells of the ciliated variety.

(e.) The head, or projecting part of a granulation being snipped off with scissors, is teased to pieces in dilute chromic acid solution ($\frac{1}{1500}$), and placed under an immersion objective of $\frac{1}{15}$ inch focus made by William Wales of Fort Lee, N. J. It is at once perceived that what, under a power of 340 diameters and excellent definition, appeared as a fibrillar connective tissue, is resolved, under 1000 diameters, into a congeries of minute nerve-fibres, the majority of which bear a small quantity of myeline, the others being apparently naked axis cylinders, or amyelinic fibres; measuring on

the average .001 mm. Nothing whatever in the field resembles fibrillar, connective, or reticulated tissue. There are present lying among the fibres a small number of cells and nuclei. Some of the nuclei are free, round, presenting a sharply defined outline, measuring from .005 to .007 mm. in diameter, and inclosing a prominent granule or nucleolus. The cells are ovoid, without membrane, somewhat granular (not pigmented), and exhibit nuclei similar in size and appearance to those described above. These cells measure in their long diameter, on the average, .014 mm.; in their short diameter .01 mm. In addition to these elements, there are three very peculiar, and we must admit, puzzling cells. These bear a resemblance to modified epithelial cells of the type described at *d*, but the long and slender extremities branch in a regular and remarkable manner. The heads of these cells present an irregular ovoid outline; measure in length about .018 mm., and transversely (short diameter) .01 mm. One of them contains a nucleus precisely similar to the nuclei above described. The prolongations or tails of the cells present no demarcation line from the heads, and taper gradually, giving off two to six branches. From the further, rounded end of a cell to the second subdivision of its tail, is a distance of .07 mm. Some of the smallest branches of these cells, by their uniform diameter, .001 to .0015 mm., sharp outline, and homogeneous appearance, bear the most striking resemblance to amyelinic nerve-fibres.

From this study we think it safe to say that in this patient the ventricular lesion was not due, as in Mr. Lockhart Clarke's case, to proliferation of the epithelial layer of the ependyma. The preparations all show a very distinct sub-epithelial lesion, whether of a truly sclerotic nature we cannot positively state. In favour of sclerosis we have the increase of density in the granulations themselves and in the underlying tissue to a depth of .5 mm., with thickening of the coats of bloodvessels and enlargement of perivascular spaces, in the same part. Against this view there may be advanced the absence of modified reticulum or neuroglia which is said¹ to constitute so large a proportion of the ependyma ventriculorum. Had we contented ourselves with using a power of 340 diameters, we should have honestly asserted the existence of fibrillar tissue, as making up the bulk of the granulations. The uncertainty of our study of this lesion has demonstrated to us the great want of a new investigation, with modern objectives, into the normal histology of the walls of the ventricular cavity.

Sections made through the aqueduct of Sylvius exhibited granulations of precisely similar constitution. It will be remembered that in the preparations from the medulla oblongata, granulations of the same appearance were seen to spring from the floor of the fourth ventricle.

The lesion of the general ventricular cavity may be summed up as follows: A condensation of the sub-epithelial tissues, with perivascularitis and dilatation of the vascular canals, to a considerable depth. A similar condensation immediately under the epithelial cells, affecting the form of nodules, which nodules in course of growth have burst through the epithelium, and projected into the ventricular cavity. In their development these nodules have, furthermore, set up an irritation in the adjoining structures which has resulted in a modification (proliferation?) of the epithelium itself; this last being, we firmly believe, a secondary and subordinate process.

Cerebellum.—Nothing abnormal is discernible in sections of the convolutions of this organ.

¹ Virchow, Cellular Pathology, pp. 311-14. (Am. ed.)

Cerebrum.—Sections cut from one of the convolutions of the right anterior lobe, and from one of the inferior part of the right temporo-sphenoidal lobe, show no lesion beyond the presence of a few yellowish granulations along the bloodvessels.

We will only add a few words of an historical nature concerning the granular degeneration of the ventricular walls.

First observed by Bayle,¹ this lesion does not seem to have been observed with care until 1861, when Dr. J. Lockhart Clarke,² in studying the alterations present in a case of progressive muscular atrophy, found the fourth ventricle studded with granulations, of which he gives the following concise account:—

“The whole floor of the fourth ventricle, as already remarked, presented a very peculiar and unnatural aspect. Instead of being smooth and shiny, as in the healthy state, it was entirely paved with a multitude of granulations or small rounded eminences, which were very closely aggregated, but differed from each other considerably in size. I removed some of them for examination, first by scraping them off from the surface to which they adhered with some tenacity; and then by shaving off a section together with a thin layer of the subjacent tissue. When examined by means of a sufficiently high magnifying power, the granulations or eminences were seen to consist of globular aggregations of the ordinary epithelial cells, which, in a natural or healthy state, are arranged side by side, and form a smooth or level surface on the floor of the ventricle. The tissue immediately subjacent, and which consists of exceedingly fine fibres proceeding from the tapering ends of the epithelial cells and running in various directions, was more abundant than usual; and—as might be expected from the homologous relation of this part to that which surrounds the spinal canal—they were interspersed with corpora amylacea, but certainly not to a corresponding extent.”

The same granular condition of the ventricular surface was, about the same time, attracting the attention of a French alienist, M. Joire, who, early in 1861, submitted to the Paris Academy of Medicine³ a paper in which he stated that he had found this condition only in cases of general paralysis of the insane, and advanced the view that this was a characteristic lesion of the disease. In the *Gazette Médicale* for 1864, page 528, is an abstract of a second paper, by M. Joire, published in the *Bulletin Médical du Nord*, in which he describes the appearances to the naked eye of these granulations. He states that the parts underneath the epithelial layer are softer and more translucent than usual. This condition often coincides with dropsy of the ventricles, and subarachnoid effusion. In early

¹ Bayle, *Traité des Maladies de Cerveau et de ses Membranes*. Paris, 1826, p. 464. [Quoted by Clarke.]

² Dr. J. L. Clarke and Dr. Gairdner, *Relation of a Case of Muscular Atrophy*, Beale's *Archives of Medicine*, vol. iii. p. 1, 1861. London.

³ Joire. *Bulletin de l'Académie Impériale de Médecine*, séance du 19 Février, 1861, p. 395.

stages the granulations are small, numerous, and remind one of grains of sand. In old cases the granulations are larger, whitish, or transparent, and produce a feeling of roughness under the finger. The lesion is most common over and round about the calamus scriptorius. Finally, M. Joire claims that the lesion is constant in general paresis. In this abstract there is no evidence whatever of the microscope having been used.

Griesinger,¹ in his classical treatise, merely observes that in chronic hydrocephalus the ependyma of the ventricles is very often found covered with granulations, thickened and denser than normal, and as resisting as leather.

We find the following in Leidesdorf:² In senile hydrocephalus there is found a thickening of the ependyma of the ventricles, as part of the general thickening of the neuroglia, giving rise to a granular appearance. Under the head of new-formations this author mentions, without details, granulations of the ventricles which are derived from connective tissue.

Maudsley³ merely quotes Clarke and Joire, denying the latter's assertion concerning the meaning of the lesion. In Dr. Blandford's⁴ new book the following passage occurs:—

“Granulations of the lining membrane of the ventricle have been thought by M. Joire to be peculiar to general paralysis, which they are not. They have been observed in old-standing cases of mania, or dementia, together with similar granulations of the pia mater of the parietal and occipital lobes and medulla oblongata. They are, no doubt, an aggregated and abnormal condition of the epithelial cells, and seem to contain a homogeneous substance, probably exuded lymph.”

Rindfleisch⁵ speaks of granulations, like dew-drops, occurring on the ependyma of the ventricles, more particularly upon that of the fourth ventricle, in cases of chronic hydrocephalus, epilepsy, masticatory spasm, disorders of speech. He considers them as made up wholly of fibrillar connective tissue, and a very few cellular elements.

Finally, we have been informed by Dr. Francis Delafield, one of the curators to Bellevue Hospital, that during the last two years he has met with this lesion about a dozen times, nearly always in connection with granulations in the pia mater. He has not, however, made any microscopical examination of these products.

¹ Griesinger, *Traité des Maladies Mentales* (traduction du Dr. Doinic). Paris, 1865, p. 496.

² Leidesdorf, *Lehrbuch der psychischen Krankheiten*. Erlangen, 1865, s. 256.

³ Maudsley, *The Physiology and Pathology of Mind*. Second edition. London, 1868, pp. 455-6.

⁴ Blandford, *Insanity and its Treatment*. Am. ed., Phila., 1871, p. 121.

⁵ Rindfleisch, *Lehrbuch der Pathologischen Gewebelehre*. Leipzig, 1869, s. 546-7.

ART. IX.—*Unilateral Dislocation of the Fifth Cervical Vertebra; Reduction.* By ROBERT REYBURN, M.D., Professor of Surgery, Medical Department, Howard University, Washington, D. C.

S. F., colored, age 24, admitted to Freedmen's Hospital, Washington, D. C., October 24, 1870. Stated that on August 25, 1870, while lying prone on the ground near two men who were wrestling, one threw the other (weighing about 150 pounds) with great force across the right side of patient's neck. He felt something give way in his neck, and immediately found that he had lost to a great extent the rotary movements of his head and neck; and at the time had a slight degree of hemiplegia of the right side. The paralysis increasing he sought medical advice, and two physicians attempted to reduce the injury, but failed. His symptoms continued to augment in severity, and when admitted to the hospital, his head was almost immovable as regards lateral motion, and was turned quite markedly towards the left shoulder; the antero-posterior movements of the head could be performed tolerably well; a marked depression was felt over the fifth cervical vertebra, and the spinous process of this vertebra could be felt deeply imbedded in the neck to the right of its natural location; the spinous processes of the third and fourth cervical seemed thicker and larger than usual, and the muscles of the neck were much enlarged and somewhat indurated.

There was complete paralysis of the right upper extremity, but only partial of the lower extremity; in fact at the time of admission he could walk a few steps, though with some difficulty. There was, as might have been expected, no facial paralysis. The loss of sensation on the right side was not so complete as the paralysis, and on examining the tactile sense by means of the compasses, I found it to be about one-half as acute as that of the opposite side.

The temperature of the right side was not appreciably lower than that of the left. Pulse 65 to 70. Tongue somewhat coated, functions of bowels and kidneys apparently normal.

After making a careful examination with Dr. P. Glennan, I felt convinced that there was a dislocation forwards of the articulating processes of the fifth cervical vertebra on the right side, or, as Malgaigne calls it, "a case of unilateral dislocation of the fifth cervical vertebra."

It was with some hesitation that I finally concluded to attempt reduction; the risk was great, for it was impossible to tell to what extent the spinal cord might be disorganized by continued pressure upon it of the bony process during the long period that had elapsed since receiving the injury; in other words, I feared that the force that must necessarily be applied to produce extension sufficient to disengage the articulating process, and allow of its reduction, might injure the spinal cord, and of course cause the instant death of the patient. The consideration that seemed to require an attempt at reduction was the rapid aggravation day by day of the hemiplegic symptoms, for on November 1, 1870, the paralysis of the right lower extremity had so increased that locomotion was entirely lost, and the paralysis of the right upper extremity was also nearly complete.

November 2, 1870, or nine weeks and two days after the receipt of the injury, in presence of Drs. P. Glennan, F. A. Ashford, J. H. McBlair,

J. E. Cheney, J. E. Mason, and a number of medical students—the patient having been anæsthetized, and placed on his back on the operating table, with his shoulders raised by means of pillows—firm and steady extension in a horizontal direction was made by Drs. Glennan and Cheney, while the shoulders and trunk were firmly counter-extended by Drs. Ashford and McBlair. Finding it impossible to reach the fifth spinous process satisfactorily from the back part of the pharynx (as was done in Dr. Hickerman's case¹), I succeeded in grasping it firmly from the outside of the neck. After applying the extension about three minutes, on a given signal Drs. Glennan and Cheney rotated the head toward the right side, whilst I endeavoured to turn the vertebra by its spinous process to its normal position, and (with a snap which was audible to all present) fortunately succeeded.

The patient, on coming out of his condition of anæsthesia, expressed himself as feeling much better, and the rotary movements of the head and neck were restored.

Nov. 3. Pulse 64. Feels quite well; thinks there is already some improvement in sensation; can move the leg freely, but not the arm.

4th. Pulse 54. Does not feel quite so well; some pain in the back of the neck and head; thinks it is from the position in which he has been lying; after adjusting the pillow under the back and shoulder, felt much better.

6th. Pulse 60, respiration 20. Olei ricini and injection to move bowels, and tincture of iodine to each side of cervical vertebræ; can move the head quite freely.

7th. Pulse 60, respiration 20. Some variation in sensation; some days a little better and the next worse; cannot move his right leg as much as he could the second or third day after the luxation was reduced.

10th. Pulse 50, respiration 24. Applied emplastrum cantharidis 2x3 to left side of neck; has no pain; uneasy from position; has to be changed occasionally.

12th. Pulse 60. Yesterday noticed a little numbness in fingers of left hand. This A. M. says it extends to the wrist, also in the toes of left foot; bowels moved yesterday by enema. Gave strychnia, $\frac{1}{16}$ grain ter die.

13th. Pulse and respiration normal. Numbness in left arm and foot increased, otherwise about the same.

14th. No change; urinates frequently, but does not pass much at a time; enema to move bowels.

16th. Urine dribbles away involuntarily; condition otherwise unchanged.

17th. Pulse and respiration slightly irregular for the first time; rested badly last night. At 7 o'clock P. M., pulse 120, respiration 40, and abdominal; every inspiration made with evident effort; sensible, but unable to speak; bathed in perspiration; failing rapidly. Died at 9.20 o'clock P. M.

Post-mortem.—The vertebral column was taken out, and the laminae of the vertebræ were sawn through on each side, thus exposing the spinal cord and membranes. Spinal cord was congested and softened from the seat of injury to its upper extremity, and also as far down as the sixth dorsal vertebra. On a longitudinal incision being made into the cord and membranes opposite the fifth cervical vertebra, a small abscess about the size of the kernel of an almond, and containing probably half a fluidrachm

¹ See Buffalo Med. Journal, vol. x. p. 702. 1855.

of semifluid purulent material, was found in the spinal cord itself. There was no fracture of the spinous processes, or laminae of any of the vertebrae. Organs of thorax healthy. Brain weighed 45 ounces, and, though considerably congested, was otherwise normal.

Remarks.—The above case is a characteristic example of that exceedingly rare surgical injury, dislocation forwards on the right side of the articulating processes of the fifth cervical vertebra. Dislocations of the various vertebrae entering into the composition of the spinal column, when complete, are usually and almost invariably fatal from the injury and pressure necessarily exerted upon the spinal cord by the luxated vertebrae. These luxations, when uncomplicated with fracture, are as a rule confined to the cervical portion, and from the anatomical conformation of the dorsal and lumbar portions of the spinal column, it is indeed very difficult to understand how it is possible for a simple dislocation to take place. Dupuytren, however, records three cases of dislocation of the dorsal vertebrae, in one of which there was no fracture whatever of the vertebra. (*Clin. Chirurg.*, tome i., page 395.) Rust (*Arthro Kokologie*, page 71) states that even the dorsal and lumbar vertebrae may be separated from each other without fracture. Sir Charles Bell (*Injuries of Spine and Thigh Bone*, page 25) gives a case of simple dislocation of the last dorsal from the first lumbar, with complete division of the spinal cord. Sir Astley Cooper, on the other hand, never met with a case of simple dislocation of the dorsal or lumbar vertebra unaccompanied with fracture. Malgaigne (*Traité des Fractures et des Luxations*, tome ii., page 384) enumerates thirteen cases of dislocation of the spinal column, which had been verified by *post-mortem* examination. The greater number were complicated with fractures of the body of the vertebra or the processes; but in three the dislocation was complete, though unattended with any fracture whatever. The greater mobility of the cervical vertebrae is of course the explanation of their greater liability to dislocation, and it may be appropriate here to quote some of the cases of this injury now on record.

M. Malgaigne, who has carefully investigated this subject, states that in the great majority of these dislocations the upper vertebrae are displaced forwards upon the lower, and quotes forty-one cases, each of which was verified by *post-mortem* examination, which were forwards, and only met with four in which the point injured had been displaced backwards. The dislocation forwards, he also states, may be considered as presenting two varieties, namely, the bi-lateral, affecting both articulating processes, and the uni-lateral, in which only one articulating process is displaced. The bi-lateral again may be complete or incomplete. In the complete bi-lateral dislocation, of which Malgaigne gives twenty-three cases, the inferior articulating processes of the dislocated vertebrae are situated altogether in front of the superior articulating processes of the vertebrae below. This dislocation is almost invariably fatal, death usually taking place in from

twenty-four to forty-eight hours, and the higher the level of this injury the sooner the fatal result takes place.

A patient under the care of Mr. Jordan, in the Manchester Infirmary, with dislocation of the seventh vertebra, survived for six days. (*Lancet*, vol. i., page 599.) Another, under the care of Mr. Roux, lived until the eighth day.

Incomplete bi-lateral dislocation. In this variety the inferior articulating processes of the injured cervical vertebræ are displaced upwards upon the superior articulating processes of the vertebræ below, but without complete separation. M. Malgaigne gives nine cases of this injury, and the prognosis seems just as unfavourable as in the complete bi-lateral dislocation, for four of these cases died within twenty-four hours, and one only lived twelve days.

Uni-lateral dislocations of the cervical vertebræ is the class to which the case I have reported is to be referred, and it should be remembered that in this class of cases the prognosis, though grave, is by no means so unfavourable as in either of the two varieties previously mentioned. In fact, when luxation occurs at the third, fourth, fifth, or sixth of these bones, and only one articular process is luxated, the accident is not necessarily, nor always fatal. Boyer (*Mal. Chirurgy*, tome iv., page 114) states that many cases have spontaneously recovered, with permanent inclination and immobility of some portion of the neck as the result of this injury. Malgaigne gives the particulars of nine fatal cases of this dislocation, and of seventeen cases in which recovery took place. On looking at the records of the fatal cases, we find that death, when it does occur, does not take place as rapidly as might be expected; thus in one of Malgaigne's cases the patient survived forty days, and another lived one hundred and one days after being injured.

The most important question, however, to be decided, and that which has induced me to report this case, is whether it is advisable to attempt reduction in this class of injuries, or not. This has been a vexed question for many years, and one in which there has been a great diversity of opinion among surgeons; many of them holding with Boyer that it is unjustifiable to attempt reduction, fearing the injury to the cord that may result from the necessary extension. (This, of course, may, as it has in at least three cases, produce the instantaneous death of the patient.) It seems to me that the history of the case just reported is very instructive, and throws some light upon this point. We see here a conjuncture of the most unfavourable circumstances that it is possible to conceive. It must be remembered that the case was not a recent one; he had received the injury over two months before being admitted to the hospital, and his paralysis was marked and rapidly increasing. In spite of all this we find that reduction was safely and rapidly accomplished, and was followed by a marked mitigation and amelioration of all the symptoms. It is true

that this improvement was not permanent, but it is certainly a remarkable and interesting fact to know that a dislocation of this kind can be safely reduced nine weeks and two days after the receipt of the injury, with apparent benefit to the patient.

As will readily be gathered from the above, I am decidedly of opinion that reduction should always be attempted in this class of cases, and, furthermore, I believe that the dangers of non-interference are so great that it is the surgeon's duty to do so even at the risk of injuring his reputation in the event of failure.

ART. X.—*Remarks on a Case of Extensive Cleft of the Hard and Soft Palate, closed at a Single Operation.* By WM. R. WHITEHEAD, M.D., of New York; Physician for Diseases of Women at the Northwestern Dispensary; Fellow of the New York Academy of Medicine, etc. (With thirteen wood-cuts.)

DURING the year 1868, in two successive numbers of this Journal,¹ I called attention to the advantages of an operation for cleft palate, known as muco-periosteal uranoplasty. Subsequent experience has fully confirmed the favourable opinion which I first formed of this operation; and, from time to time, I have published, in other periodicals, the result of this experience, and in each case the modifications which it suggested. The history of the following case is, in some respects, more instructive than the others, especially from the fact that after the closure of the cleft, an unsuccessful attempt was made to lengthen the soft palate. It is proper to state that Passavant, of Frankford, and Mr. Francis Mason,² of the Westminster Hospital, having fully considered the disadvantages which attend sometimes the improvement in speech after a successful closure of a cleft palate on account of the shortness of the palate, have each endeavoured to obviate this defect. Mr. Mason's operation, which is confined to a single case, does not lengthen the palate, but is designed to liberate it, so that the action of the levator palati muscles will draw it upward and backward. Passavant pared the inner borders of the palato-pharyngeus muscles and united them by suture, which procedure compelled the patient to breathe entirely through his mouth, the inconveniences of which are manifest. My own operation was for the purpose of adding to the length of the palate by the dissection of two lateral flaps. So far, however, as regards the benefit to the patient, in the improvement of his speech and otherwise, of closing with his own flesh an extensive cleft of the roof of the mouth and soft palate, instead of with an obturator, the relation of the following case will, I hope, bear additional testimony to my previously published state-

¹ July and October, 1868.

² Braithwaite's Retrospect, Jan. 1870, p. 123.

ments.¹ In at least two of my cases² there was a permanent reproduction of bone in the periosteal flaps with which the cleft was closed. To Langenbeck, it is known, is due the credit of having established the fact, that the muco-periosteal tissues, with which a fissure in the hard palate is closed, may reproduce bone. But the acceptance of a scientific truth, like this one, is often slow and attended with difficulties and doubt; I am not disposed on that account to relax my efforts to further demonstrate it, because it is already supported by facts that are patent.

To those who will take the pains to study carefully the details of periosteal uranoplasty, I believe the closure of even a very wide cleft of the hard and soft palate, at one sitting, will not be found a difficult operation. The remark has been made to me, that this operation requires a special manipulation. The same may be said of other operations, which have, at first, offered some difficulties; but with the aid of the gag and instruments that I use, especially the needle, this operation can be done with much greater facility.

CASE.—J. C., æt. 35, was sent to me by Dr. John W. Warner, of this city. The patient had a cleft of the soft and hard palate which extended to the alveolar arch in front, and the dimensions of which are represented by the following drawing (Fig. 1), made with the utmost pains and accuracy. Before the operation he pronounced pretty well all the letters of the alphabet except the following: G, nasal; J, nasal; and K, slightly nasal.

Drs. James L. Little and Bozeman, of this city, Dr. Giberson, of Brooklyn, and a number of other physicians, witnessed the operation, which was done December 16, 1870.

Fig. 1.

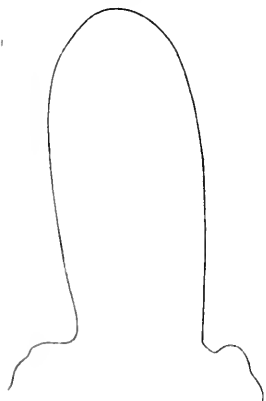
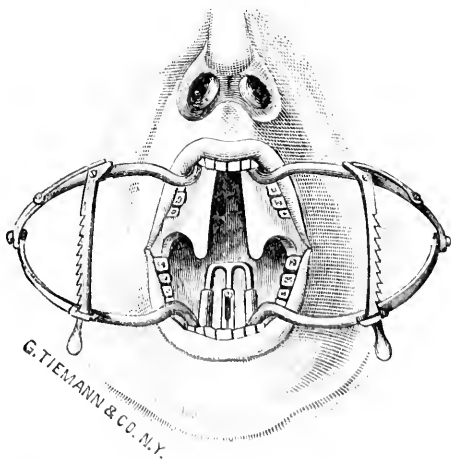


Fig. 2.



The patient was etherized, and his mouth kept open with a gag similar to the one represented at Fig. 2.

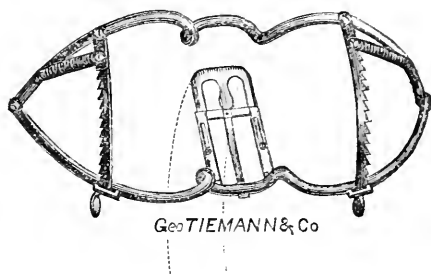
¹ Trans. of American Medical Association, 1869.

² See also a tabulated statement of my cases in Medical Gazette of June 25, 1870.

This gag is made of steel, and nickel-plated, and is well suited to the operation for cleft palate while the patient is under the influence of ether. The instrument is provided with a sliding tongue-depressor, which adapts it to different patients, and has two stout ratchets, kept in position either with a spiral spring or slightly curved piece of steel, which presses on the upper end of the ratchet. It is necessary to wrap a piece of yarn around the part of the wire which presses on the gum, whenever the instrument is used for an operation.

With a view of regulating the depression of the tongue, the present case suggested an improvement in this gag (see Fig. 3). Mr. Stohlmann,

Fig. 3.



of the firm of Tiemann & Co., rendered me valuable aid in making this improvement, which consists in having the tongue-depressor attached by a double hinge-joint, and provided with a strong and flat steel spring; which at one end has teeth that catch against corresponding teeth on the gag, so that, by bearing the finger firmly on the depressor, the depression of the base of the tongue can be increased at will, and without removing the gag from the mouth. By this means, the lower part of the pharynx can be made more accessible for division very low down of the palato-pharyngeus muscles, and for other manipulations on this part of the throat.

These muscles were each seized low down with a pair of forceps, such as are illustrated at Fig. 4, and divided

Fig. 4.



with long curved scissors like those represented at Fig. 5.

Fig. 5.



The levator palati muscle of each side was thoroughly divided, and also the *muco-periosteal* membrane which lines the lower part of the internal pterygoid plate, with knives like those represented at Fig. 6.

Fig. 6.



These knives were also used for paring the edges of the cleft; and as they will become dull after having been used to divide the levator palati, I was provided with two pair.

The next step in the operation was to make the side cuts, along the teeth, through the muco-periosteal tissue of the gum, to the bone. These cuts extended from beyond the last molars to the external incisors on each side (see *American Journal of the Med. Sciences*, Oct., 1868), and were made with a knife like that represented by Fig. 7.

Fig. 7.



The instrument shown by the engraving at Fig. 8, and which is shaped like a hoe and has a cutting edge, was used to divide the muco-periosteal tissue along the edges of the cleft of the hard palate, and also to *divide the tendinous insertion of the palate muscles along the posterior border of the cleft palate bones*.

Fig. 8.



The periosteal tissue of the gum was detached from the bone on each side, *except at the anterior palatine foramen, and posteriorly at the foramen where the superior palatine artery emerges*, with an instrument like that represented by Fig. 9.

Fig. 9.



This is Dr. Sayre's instrument for detaching the periosteum in operations about the hip-joint, and elsewhere, and is excellent for detaching the muco-periosteal tissue in an operation for cleft palate. This is a heavy and solid steel instrument, resembling somewhat an oyster-knife, and is represented half size.

The edges of the cleft were widely pared with the knives represented at Fig. 6. During the paring, the edges of the flaps were held with a ten-

Fig. 10.

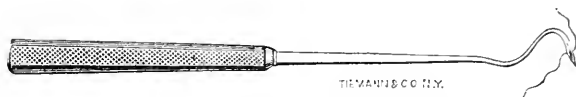


culum like Sims', but with a hook nearly the fourth of an inch long, and bent at right angles to the shaft. See Fig. 10.

This tenaculum is useful for pulling the velum aside, for holding the flaps, for catching the thread used for passing silver wire, also for holding the wire in approximating the edges, and for other purposes.

Nine or ten silver sutures were passed with the needle shown at Fig. 11. I used three different sizes. I have in other cases used a spiral caulated

Fig. 11.



needle to conduct the silver wire, but I much prefer this one. It is spiral, has an eye near the point, and, when used, the operator should stand behind the patient, and, in bending over him, pass the sutures from right to left. The thread should be looped, so that the two free ends may hang out of the eye of the needle on its convex side. When the point of the needle has transpierced the left flap, I pull out the two free ends of the thread with the tenaculum, and then disengage the needle.

After the passage of the wires, by means of the looped thread, they were adjusted and twisted in the same manner that Sims does in the operation for vesico-vaginal fistula.

Fig. 12.



Fig. 12 shows his forceps, and Fig. 13 a wire adjuster, shaped to adapt it to the operation for cleft palate.

Fig. 13.



After the operation, some lint was stuffed into the side cuts, and the patient was put to bed, and during two weeks nourished with soups and strong broths. Each day the lint was removed, and the side cuts, and also the throat, washed out with carbolized spray, by means of Richardson's nebulizer.

On December 30th, fourteen days after the operation, the union was complete and firm throughout the entire length of the cleft, and in the course of three or four weeks the side-cuts were completely healed, and the previous chasm in the hard and soft palate, as shown in Fig. 1, entirely closed. But the new palate was too short, and too tense, to perform properly the functions of a normal velum palati.

This patient was exhibited to about forty gentlemen of the Medical Library and Journal Association, and called forth considerable comment about his speech, which was generally admitted to be quite satisfactory. He was requested to read aloud, to pronounce the letters of the alphabet, and to count. It was explained to the gentlemen present that an operation would be attempted to lengthen the palate. About the first week of last February, assisted by Dr. Henry Shift, of this city, I endeavoured, by a difficult and laborious dissection of the palato-pharyngeal muscles,

to form flaps, with which to lengthen the new velum palati. Having seized, with a pair of forceps, the palato-pharyngeus on the right side very low down, I divided this muscle and a part of the mucous membrane of the prevertebral region, and dissected upward with a pair of curved scissors a flap more than sufficient to form, with a corresponding one on the opposite side, a long and dependent curtain to the new velum. My dissection was so extensive that I impaired the vitality of the flap, but one of which was dissected out, and having recognized my error before commencing to dissect out the other flap, I desisted from the operation, and was very fearful that the good results of the first operation would be lost. There was a slough of the part and considerable loss of substance on the right side, and some retraction of the palate on this side, but without impairment of the speech. I last saw him on April 14; the contraction of the palate on the right side was, I thought, less. He said that his speech was a good deal improved and that strangers understood him better. He also stated that his relatives and friends noticed an improvement in his speech. At all events I was much pleased that no bad consequences resulted from the second operation, which was attempted. The loss of substance was confined to a part of the palato-pharyngeus muscle of the right side, and did not affect the newly made palate, except by a certain degree of contraction backward, which possibly is of some benefit to him.

In pronouncing the letters of the alphabet, the J was quite distinctly pronounced; the sound of G was, I thought, less nasal, but that of K was still nasal, and indeed about the same as before the operation.

ART. XI.—*Consumption: Is it Contagious?* By D. FRANCIS CONDIE, M.D., of Philadelphia.

Is pulmonary consumption communicable from the sick to the well, directly or indirectly, in other words, by either contagion or infection? It is somewhat remarkable that so important a question, even up to this day, should remain still a mooted one. In many parts of the continent of Europe—the southern portions of France, Italy, and Germany, for example—the contagious character of the disease is firmly believed in by the people generally, and even by many of the leading physicians. In some places, especially in the south of France, so complete is the conviction as to the communicability of consumption that upon any one dying of the disease the bed on which the patient lay is invariably burned. By the English and American physicians, generally, the contagious or infectious character of consumption is, I believe, not recognized; or, perhaps it would be more correct to say, that by them the entire question is simply ignored. It is very certain that it is one in respect to which no attempt has yet been made to subject to a careful and unbiased investigation, the exact value and true bearing of the facts that, on the one hand, have been adduced to prove the communicable character of tubercular phthisis, or to disprove it on the

other. It has been argued, it is admitted, and certainly with some apparent truth, that in those portions of continental Europe where tubercular disease of the lungs prevails, it might almost be said as an endemic, the apparent contagiousness of consumption is to be explained by the fact that the major portion of those who are called upon to nurse, day and night, consumptive patients, in the latter period of the disease, may reasonably be supposed to be predisposed, to a greater or less extent, to tuberculosis. And becoming worn down by want of rest, fatigue, and anxiety, and grief, perchance, for the loss of a dearly beloved relative or friend, the latent disease is roused into action, and a previously healthy nurse follows soon the sick one waited on, to his or her grave.

There are, however, many facts on record in respect to which this explanation will not apply—where persons in perfect health, and in whom it was not possible to detect the slightest degree of predisposition to pulmonary tuberculosis, have been attacked with phthisis and died of it, after close association with those who were suffering under the disease. A few such cases have fallen under my own notice, and have been carefully watched by me from their commencement until their close. These cases, or rather an outline of them, I shall now present, from the notes recorded daily in my case-book, whilst they were under my care.

The facts connected with them, I would remark, are not brought forward by me as conclusive or even presumptive evidence of the communicability, directly or indirectly, of consumption from the sick to the well.

The first case to which I shall call attention is a particularly striking and interesting one.

J. T. and wife, natives of Dublin, Ireland. At the time of his arrival Mr. T. was in the 39th year of his age; tall in stature, with a robust well-developed frame; a distinctly marked sanguineous temperament; dark gray eyes; and a bushy head of hair of a dark walnut hue. His habits were strictly temperate. His wife, 26 years of age, was short in stature, slim-built, of a delicate, rather pale complexion; light blue eyes, and light flaxen hair. Though of an active, sprightly disposition, she was easily fatigued, and particularly susceptible to cold. The short, dry hacking cough with which her frequent otherwise slight attacks of catarrh or bronchitis were attended, was with difficulty controlled, but would remain for a long time after all other symptoms of disease had ceased. She was the mother of two children, both girls, who, in their constitutional peculiarities and temperament, resembled more their father than their mother. They are both still living—healthy women—the heads of families; the eldest being 57, while the youngest is in her 54th year.

Soon after his arrival in Philadelphia, Mr. T. received the appointment of instructor in Greek and Latin, in one of our leading institutions of learning, which situation he retained up to a short time previous to his death, which took place some four years subsequent to his immigration.

During the second year of her residence in Philadelphia, Mrs. T.'s health began rapidly to decline. At the end of a few months she was labouring under all the symptoms of well-marked tubercular consumption. She be-

came soon too weak and ailing to quit her chamber, and in a short time subsequently she was confined entirely to her bed. The disease ran a rapid course to a fatal termination. Her husband was assiduous in his attendance on her, during all the hours, day and night, that he could be spared from his duties at the college, and when she died, his grief, though undemonstrative, was intense.

A few months subsequent to the demise of his wife, the health of Mr. T. began visibly and rapidly to decline. He complained at short intervals of attacks of what he denominated "a cold;" these were attended with an incessant, dry, hacking cough; slight febrile exacerbations in the afternoon, the subsidence of which, towards the turn of the night, was attended with a clammy perspiration. Emaciation advanced very rapidly, and soon, to the great surprise of his friends, the unmistakable symptoms of pulmonary consumption set in, and terminated in death, about eighteen months after the death of his wife. A post-mortem examination revealed the true character of his disease—pulmonary tuberculosis.

A second case, equally striking and interesting, occurred in the family of the widow of Captain S., and three daughters. During his lifetime the captain was attached to the United States navy. He died of Bright's disease of the kidneys, about three years previously to the family falling under my notice, leaving a widow and three daughters in extreme poverty. The eldest daughter, twenty years of age, assisted her mother in the domestic affairs of the household; the second, seventeen years old, attended in a retail dry-goods store, to and from which she was obliged to walk, summer and winter, in all kinds of weather; the youngest daughter, who was in her fourteenth year, was engaged at home in colouring, pasting, and mounting maps and charts for a large publishing house in Philadelphia.

The earnings of the two younger girls, though small in amount, sufficed, with the practice of the strictest economy, for the essential comforts of life.

Unfortunately, the second daughter, one autumnal morning, going to the store where she was employed, was overtaken by a heavy shower of rain, by which her clothing was rendered thoroughly wet. She had no opportunity of changing them until her return home in the evening. At dinner time the rain was still pouring down in torrents, and she was unable to command the shelter of an omnibus, none running in the direction of her home. The result of this accidental exposure was a severe attack of acute bronchitis, which, notwithstanding all remedial measures, assumed a chronic form, and after lingering on for over two months gave place to all the recognized pathognomonic symptoms of pulmonary phthisis, under which the poor girl finally sunk. During her entire sickness the care of nursing her fell in great measure upon her sisters. By day the elder watched by her bedside, while the younger devoted every moment of her time to her maps, for upon her earnings depended now the entire support of the family. Throughout the watches of the night she relieved her sister, by undertaking the entire care of the sick one. Soon after the death of the latter her health began so rapidly to decline, that within a very short time she could no longer continue her work on the maps, and no alternative would have been left than her removal to the almshouse, had it not been for the assistance furnished the family by certain benevolent ladies, whom I succeeded in interesting in their behalf. At the end of about eight months, the poor girl died with all the symptoms of tubercular consumption. Her mother survived her many years, in the enjoyment of good health, and died finally,

simply of old age. The oldest sister married, and for aught I know to the contrary, may be still living.

The third observation, an outline of which I am about to give, may not appear, perhaps, of so striking a character as either of the above. So far as I could learn, however, neither of the members of the family inherited any predisposition to tuberclosis.

Two sisters, aged respectively fourteen and eighteen years, had lost their mother when the youngest was still an infant. Their father—Mr. B.—was a highly respectable merchant, with the means and the disposition to surround his daughters with everything necessary for their comfort and happiness. He was in the enjoyment of uninterrupted health. His eldest daughter was deformed, in consequence of an injury to her spine, caused by her having been thrown out of a child's coach, in which she was being drawn by a careless domestic, when an infant—otherwise her health was good, while the amount of strength and the agility she displayed, notwithstanding her deformity, was somewhat surprising. The younger sister was well and symmetrically formed, and without any recognizable predisposition to disease of any kind.

One cold winter night, she made one of a large sleighing-party bound to an establishment some six or seven miles distant from the city. Here they indulged in dancing—partaking in the intervals of some kind of hot beverage. Several of the young ladies, among whom was Miss B., becoming over-heated, foolishly threw up a window, and seated themselves in its immediate vicinity, to become cooled off, as they expressed it.

Miss B. returned home and retired to bed, with no further uncomfortable sensation than what arose from extreme fatigue. Late on the ensuing morning, however, she was awaked by great difficulty of respiration, a sense of constriction across the chest, a throbbing head, a short, dry cough, and considerable fever. I was immediately sent for, and found her to be suffering from an attack of pneumonia. By appropriate means, she soon became greatly relieved, and passed the following day and night in tolerable comfort. On the morrow, however, the dyspnoea, and the other symptoms returned, but with less intensity. The disease proceeded thus for some eight to ten days. The cough had become, in the mean time, moist, and finally attended with a tolerably free expectoration of rust-coloured sputa. The patient's nights were now restless, and she lost flesh and strength rapidly. A close examination of the lungs led to the suspicion that they had become the seat of a deposit of tubercles which, after her death, seven months subsequently, was on an examination of the lungs found to be the case. During the entire period of her sickness, she was nursed most faithfully and unremittingly, both day and night, by her sister, who had, previously, the most robust health. And yet, not long after her demise, the elder Miss B. began to exhibit unequivocal symptoms of chronic disease of the chest, and at the close of one year she died of confirmed tubercular phthisis.

One more observation. Mr. J. M. was born in the State of New Jersey. Among the several branches of his family on both his father's and mother's side, there were evident traces of a prevailing tendency to a strumous diathesis, while in the direct line of his immediate ancestors, there had occurred several deaths from pulmonary consumption. When 21 years old, Mr. M. came to Philadelphia, and entered, as a clerk, a retail dry-goods

store. In his twenty-sixth year he was married to a young lady of Philadelphia in her twenty-second year. At the time of her marriage, she was in the enjoyment of excellent health. I had been well acquainted with the several members of the lady's family for two generations back. Her grandparents, on her father's side, were from France. They possessed strong, wiry frames, and enjoyed the best of health until long after old age had set in. Her own father, with the exception of occasional attacks of dyspepsia, showed no predisposition to disease. On her mother's side, the members of the family were chiefly strong healthy farmers, with constitutions the very reverse of strumous. On his marriage, Mr. M. removed to a small town on the Delaware, south of Philadelphia, and opened a stationery and fancy store. The place was not a very healthy one, and Mr. M.'s health soon began to give way; his symptoms being always indicative of pulmonary disease. The health of Mrs. M. began, also, to give way—more especially after the birth of her first child (a girl, still living, and to all appearance healthy). Mr. M. decided, at the close of the third year of his storekeeping, to sell out his stock, return to Philadelphia, and recommence his former career as clerk. His health still continued bad, with no signs of improvement. That of his wife deteriorated, however, far more rapidly than his. She soon was confined to her bed with all the pathognomonic symptoms of tubercular consumption, and in the course of the third year after her return to Philadelphia, she died. Her bereaved husband lingered on some eighteen to twenty months longer, a confirmed consumptive—sometimes better, sometimes worse; finally, after a brief confinement to his bed, he died also.

However striking may appear, in the foregoing instances, the fact of the occurrence of pulmonary consumption in healthy persons, and to all appearance with no predisposition to the disease, subsequently to a close association with one actually labouring under it, still I would not be understood as adducing them to prove the communicability of tubercular phthisis from the sick to the well. They are simply exceptional cases—even as such, however, highly interesting and suggestive. In my own professional experience, one of some fifty-four years, I would remark, they have constituted but a trifling percentage of the entire number of cases of consumption I have treated.

ART. XII.—*Remarks on a Case of Supposed Hermaphroditism.*

By Assistant Surgeon J. J. WOODWARD, U. S. Army.

THE number of this Journal for July, 1853, contains an article on Hermaphroditism, by Dr. George C. Blackman, in which will be found (page 65) a description of a cast of the organs of generation in a case observed by Professor H. A. Ackley, of Cleveland, Ohio. This description is accompanied by a wood-cut, taken from the cast. The specimen is described as furnished with both ovaries and testicles, Fallopian tubes, and vasa defe-

rentia, uterus, and vagina. "The vagina, it will be observed, opens into the neck of the bladder, and thus communicates with the urethra." "The Fallopian tubes were pervious. Excretory ducts of the testes were perfect."

The same Journal, for October, 1853, contains (page 367) another account of the same case, communicated by Dr. W. I. Burnett to the Boston Society for Medical Improvement. Dr. Burnett had enjoyed the opportunity of examining the original specimen, and his account, while agreeing, in the main, with that of Dr. Blackman, gives some further particulars. He describes the penis as of normal adult size; "the urethra, prostate gland, vesiculæ seminales, and bladder were like those of a well-formed male." From the epididymis of each testicle "passed off, as usual, a vas deferens, which, passing along the brim of the pelvis, finally terminated normally in a vesicula seminalis." "The vagina was of the usual size, but at its lower part it was contracted into a small tube, which passed into the urethra between the lobes of the prostate gland." "The vagina was continuous upwardly, with a uterus of normal structure and appearance, and whose size was that of this organ taken from a well-formed female of eighteen years of age. The cavity of this uterus was complete; and from it passed off, on each side, an ordinary Fallopian tube, which terminated in the usual fimbriated extremity. The ovaries were situated in their ordinary locality, and their structure was such as to leave no doubt as to their physiological character without the need of a microscopical analysis."

In Wharton and Stillé's *Medical Jurisprudence* (second edition, Philadelphia, 1860, page 391) an abstract of the case is given, taken from the foregoing reports of Drs. Blackman and Burnett. The authors add—

"The necessity, however, of the most minute and conscientious examination of such remarkable cases as this has since become apparent, for we find that the internal sexual organs were not so distinctive as represented. Dr. J. B. S. Jackson, of Boston, in addressing the Society for Medical Improvement, on this subject, stated that he had been permitted by Professor Ackley to examine the specimen. He found no trace of the os tinæ, but the uterus passed insensibly into the vagina. This last was extremely small, measuring in the smallest part, on the inner surface, not more than four or five lines in circumference. Dr. Jackson found some thickening of the tissues about where the ovaries should be, but it was ill defined and slight; 'and it would not have been thought of, except in connection with the present question.' Upon one side an incision was made into this questionable part; but nothing like a Graafian vesicle was seen, nothing but a loose cellular, or fibro-cellular, tissue. The size and structure of the testicles, so far as examined, were quite normal, and, it is said, that there was an epididymis, although the existence of a vas deferens was not clearly ascertained. The vesiculæ seminales were not found, and the prostate gland, Dr. Jackson says, had not been demonstrated."

In January, 1871, a duplicate cast of this case, handsomely made in plaster of Paris and painted, was presented to the Army Medical Museum, by Dr. Sterling, of Cleveland, Ohio. The parts were lettered and ac-

accompanied by a brief description which differed from that of Dr. Blackman's wood-cut in several particulars, chiefly in the parts taken for testicles by Dr. Blackman being labelled ovaries, and *vice versa*.

On receiving this cast I wrote to Dr. Sterling requesting him to lend me the original specimen for study, as I understood it to be in his possession. He responded by generously presenting it to the Army Medical Museum. On examination, I found the doubts expressed by Dr. Jackson more than justified, and I have felt it my duty to correct the erroneous impressions so long entertained as to this case, which is simply one of undescended testicles.

The specimen was well preserved in alcohol and in a good condition for microscopic investigation. The parts described by Dr. Blackman as testicles were really such. I had no difficulty in isolating well-formed tubuli seminiferæ, some of which were mounted in Canada balsam by my assistant, Dr. E. M. Schæffer, and placed in the microscopical collection of the museum (Nos. 3625-31). The supposed ovaries had never been cut into before I received the specimen. They proved, on microscopical examination, to be little ill-defined masses of adipose tissue, imbedded in a fold of peritonæum. There were no Fallopian tubes. The testicles were small for an adult, and the vasa deferentia, which were patulous, terminated at the two upper angles of the small triangular space which has been taken for the uterus. This space, and the supposed vagina, represent, evidently, the united vesiculæ seminales, the conformation of which is irregular in consequence of the arrest of development due to the non-descent of the testicles.

Unlike Dr. Jackson, I find a prostate gland which presents nothing anomalous, except its small size, a circumstance which, I presume, results simply from the dissection having been carried farther since he saw the specimen. The penis and scrotum are normal.

The original specimen and the plaster cast have been placed in the hall of the museum (Nos. 1066 and 1067, medical section), where they can be studied by any one interested.

ART. XIII.—*Case of Undescribed Exanthem.* By S. HENRY DICKSON, M.D., Professor of the Practice of Medicine in Jefferson Medical College, Philadelphia.

March 9, 185—. I was called to the C—— Hotel, to visit Mr. —, an old friend, resident in the upper country at the foot of the mountains, and member of Congress from his district. He is in the prime of life, enjoying good health with great powers of action and endurance, a

lawyer by profession, a student by habit, and a very popular public speaker.

I found my patient lying on his bed, in his clothes, apparently greatly fatigued and prostrated. He had just arrived from Washington, which he had left two days ago, travelling by rail without rest. He had been ailing for a short time previous, but had persisted in attendance on his duties in the House, where he had remained during all the last night of the session. Thus exhausted, it is not to be wondered at that he continued to feel sick and faint while riding along in the cars. About midnight he rose from his seat and went to the door, which he opened, and on going out, became insensible and fell across the platform, his head striking the iron balustrade which he grasped with both hands. He was found in this position by a brakesman just in time to save him from falling between the two cars, making ineffectual and almost unconscious attempts to raise himself up, or drag himself forward, and partially revived, perhaps by the cool fresh air.

He had much fever; his skin was hot and dry; his pulse small and very frequent. He complained of intense headache and great debility. His face was darkly flushed. On his forehead was a round spot of deep dark-red hue, slightly thickened and elevated, hard, about the diameter of a five-cent piece. Near the left eye was a bruise, received, probably, when he fell.

I took him at once to my house, removing him with help to the carriage, where he reclined and seemed to recover his strength somewhat. Yet it proved exceedingly difficult for him to get up stairs to his chamber, whither he persistently refused to be carried. Whether he suffered most in the effort from weakness, or from stiffness of ankles and knees, or from uneasiness and tenderness of the testes and spermatic cords, he seemed himself uncertain, but dwelt chiefly on the latter. He insisted on having a suspensory bag, which he put on at once and wore constantly.

10th. An eruption on his face is very prominent, and numerous spots have appeared, resembling the one above described. They are hard, red, thickened most in the centre, and thus slightly elevated. Two or three of them, indeed, one on the chin and one behind the ear, especially threatened to point like furuncles or small phlegmonous tumours; but they gave no pain whatever, were not sensitive to the touch, nor did they annoy him with the feeling of heat, burning, or itching. He had had a bad night, complaining of headache, sore throat, pains in the limbs and joints, and great soreness under the arms, owing, probably, to the presence of two or three spots of eruption in the axillæ. His pulse was at 90, his skin hot, his tongue much furred, with very red edges.

11th. Can scarce move his arms from the soreness in the axillæ; complains much of pain and tenderness of the wrists, upon and near which are a few spots of bright red, about the diameter of a pencil, not elevated perceptibly, not sore to the touch, nor burning. His mouth, lips, and gums are red and very sore.

12th. Has had a bad night: headache intense; pulse hard, corded, small, 90 in the minute; the skin is hot, the eyes red; the face is full of eruption which has even invaded the right eyelid; each spot has some diffused redness or areola around it, so that the whole surface looks flushed; but it is not at all swollen, nor burning, nor sore on pressing, except at one spot over the cheek-bone. The pointed furuncular-looking spot on the chin has not discharged anything at all, but is scabbing

indolently; the similar one on the neck has quietly subsided, and is disappearing. The throat is better. Spots like those on the wrists are beginning to show themselves all over the body and limbs, those in the axillæ are less annoying. The ankles and knees are painful, like the wrists, and intolerant of motion. The tongue continues to be very foul on the surface, and very red at the point and along the edges. The mind is much excited; the patient is incessantly talking to himself, evidently making speeches and gesturing.

13th. The eruption seems to have obtained its acme. There are some dozen or so of the spots described upon each of the lower limbs, about the size of the head of a pocket-pencil, circular or elliptic. They present no areola or surrounding redness; the skin between them is of natural colour and appearance; they give no sort of pain, nor tenderness, nor burning sensation. The face still presents, on the contrary, besides the still distinguishable hard spots, a diffused redness, but no swelling, soreness, or burning. The axillæ are well; the scrotum is very sore at two or three points, probably from the friction of the suspensory, which he persistently adheres to. Pulse 88; other symptoms as described, with some alleviation.

14th. Desquamation is beginning on the face, and, strange to say, all over the ears, which he has not at any time spoken of as sore, and which have not been in any notable degree swollen, nor have presented any spots of eruption, merely partaking in the general redness of the face. The hairy scalp seems to have escaped entirely. Three or four of the spots on the nose and cheek show to-day a small vesicle or little pustule of yellowish matter, very slight and superficial. The wrists are still somewhat swollen, and, with the hands and arms, quite intolerant of motion.

15th. Very little change in the condition of the patient. The soreness of the mouth subsides; the upper extremities are easier, but the knees are painful and immovable.

For several days the symptoms continue with little amelioration. The pulse is very steady at 88; the tongue furred and red; anorexia persistent; headache gradually declining; desquamation proceeding; the patient rests rather better, but complains of extreme debility, and gets pale, faint, and giddy when removed to change his position or make his bed.

21st. With much help dresses partly, and is assisted to the sofa, where he lies prostrate. He takes nourishment willingly, though the tongue continues foul; spirits much depressed, but the mind is clear, yet he talks to himself a good deal with motion of the lips.

24th. Walks a little with help about the room; his face is darkly red and mottled; on his body and limbs the spots are brownish or of mulberry hue; desquamation is over; the pulse is at 78; the tongue cleaner and paler; he is still very feeble.

25th. The spots on the body and limbs are of dark brown colour. During the entire attack a very peculiar and disagreeable odour has exhaled from the body of the patient, perceptible to all who approach him, altogether different from those with which we are familiar in smallpox, scarlatina, erysipelas, etc. etc. He takes a ride, but is so weak that he is supported, almost borne, to the carriage.

27th. He is somewhat stronger, takes a few steps unsupported, and endures well a long ride. He eats pretty heartily, and enjoys at dinner three or four glasses of Madeira, but complains of chilliness and of pain in the loins and ankles. There is some mottling perceptible on the face, but not the least mark or trace otherwise on any other part.

28th. Having arranged a bed for him in a car, he left us for his home, where he arrived convalescent.

Where shall we dispose of this case in our nosology, and by what name shall we call it? The spots, the exanthematous eruption, were unlike anything I ever saw. The whole appearance was new to all the professional friends whom I invited to see my patient. It belongs, I think, to the category of arthritic eruptive fevers, as presenting a very decided affection of the larger joints. In this it resembled rheumatism and differed from dengue. It was not erysipelas, for there was no vesicular effusion, no prominent elevation of cuticle, no soreness nor burning. The general prostration and debility were peculiar in degree and tenacity, remaining some time after the diet was full and abundant, and the digestion apparently perfect with good appetite.

Of the treatment I have said nothing. It was altogether directed *pro re nata*, to relieve suffering, which was very great, as much as was possible, and to sustain the strength of the weary and worn-down sufferer.

It may be proper to observe that the symptoms at no time put on what is called a typhoid or typhic character, notwithstanding the marked degree of debility present. There was no diarrhœa nor tympanitis, no dryness of mouth nor deposition of sordes, nor coma; nor did I ever meet with an instance of such equable continuity of febrile excitement so long protracted.

ART. XIV.—*Cases of Ovariectomy.* By WASHINGTON L. ATLEE, M.D., of Philadelphia. (Reported by J. EWING MEARS, M.D., of Phila.)

CASE 220. *Multilocular Ovarian Tumours; Extensive Adhesions; Operation March 31, 1870; Incision five inches long; Recovery.*—The history of this case will be given in the language of Dr. P. J. Winn, of Lower Winnville, Fluvanna County, Virginia, in a letter to Dr. Atlee, dated February 20, 1870, as follows: "Mrs. D. H. R., aged thirty-three years, the mother of three children, the youngest three years old last January; of medium size, good constitution, and active habits. In April, 1868, sixteen months after the birth of her last child, she suffered from nausea and vomiting, which was followed by a gradual enlargement of the abdomen, and as the menses had not returned since her confinement, she supposed herself pregnant. On the 3d of January, 1869, near the term of her supposed gestation, the catamenia, for the first time since her confinement, appeared, which caused her to send for her physician, who informed her then, or a short time thereafter, that she was not pregnant, and proceeded to treat her for ascites, using mercury, diuretics, etc., for some months, which failed to have any effect.

"On the 2d of September last, Dr. Richardson requested me to see the case with him. From all the facts then before me, and after a minute examination, I was certain it was not ascites, but evidently a dropsy of some

kind, and very probably encysted. Her general health was very good; she was quite active, although considerable abdominal enlargement existed. I suggested that all medication be discontinued, with the exception of tonics; that nutritious diet and regular and moderate exercise be employed, and that we await further events.

"On Saturday last, the 19th inst., I was again called to see her and heard the following statement: From the time of my visit in September, her general health had improved, she had increased in flesh and was quite as active as at any time before; the enlargement had increased from umbilicus upwards; the catamenia were regular up to the last period, seven days ago, at which time they failed to appear, and from which time she has been suffering, at intervals, from pain in the abdomen generally, but principally in the left groin and hip.

"The night previous to my visit, about 10 o'clock, she was taken with very acute pain in the left 'groin and hip,' which she said was like 'labour-pains,' only more protracted, and which pain was attended with copious vomiting at intervals for five or six hours.

"The following is the result of my examination: General health good with the exception of the late sickness alluded to; not quite as fleshy as when seen before; pulse 72; measurement around the umbilicus $39\frac{1}{2}$ inches, around the epigastric region, at a point six inches above the umbilicus and three inches below the ensiform cartilage, 36 inches, and along the convex surface from pubes to ensiform cartilage $17\frac{1}{2}$ inches.

"At a point about four inches to the left and below the ensiform cartilage, may be seen at some distance, a distinct, round enlargement, about two inches in diameter, which gives to the fingers, when pressed upon, a sensation like the rubbing of new leather, not at all indurated, and apparently full and tight with some kind of fluid. Fluctuation quite distinct, but more so and more dulness in entire left side; size of uterus and cervix quite normal; no œdema of extremities; digestion good, and functions of kidneys very good. The contour of the abdomen is not changed by position."

By request, Dr. Atlee visited the patient at Columbia, Fluvanna County, Virginia, March 31, 1870. He found the patient much larger than a woman at full period. The percussion sound was resonant only in the right lumbar region. Fluctuation was distinct everywhere. A polycystic mass was detected in the left hypochondrium. The pelvis was free, and the sound entered the uterus two and a half inches. The patient was emaciating rapidly, and the tumour also increasing rapidly.

Dr. Atlee operated the same day, the following gentlemen being present: Drs. Winn, Richardson, Sneed, Gay, Miller, Nelson, and others.

An incision, about three inches long, was made in the linea alba, through the walls of the abdomen, directly down upon the cyst wall. Adhesions were found to exist, and were separated by the finger as far as they could be reached. The trocar was introduced, and about four gallons of thick opaque fluid, resembling thick gum arabic mucilage, escaped. The incision was now extended to the distance of five inches; the adhesions—some of them very strong and vascular—were broken up, and the cyst withdrawn. It was attached to the right side of the uterus by a long, slender pedicle, which was clamped and then severed. The other ovary was examined and found to be healthy.

Two or three ounces of blood were sponged out of the cavity, and the wound closed by five sutures.

The tumour consisted of the right ovary, of one large cyst, with two polycystic secondary masses in its walls, one occupying the left hypochondrium, and the other the left iliac region.

The patient recovered without any untoward symptoms.

Remarks.—There is one point of peculiar interest in the above case. Dr. Winn, in his history of the case, says: "On the 19th inst. (February, 1870) I was again called to see her. Catamenia were regular up to the last period (seven days ago), at which time they failed to appear." The last menstruation must, therefore, have occurred on the 12th of January. Dr. Atlee saw her on the 31st of March following, and the menses had not appeared up to that date. The sound was introduced into the uterus to the distance of two and a half inches on that day. In a letter dated November 8, 1870, Dr. J. W. Richardson writes: "I drop a line merely to say that our ovarian patient, Mrs. R., gave birth to a very perfect, well-developed female child, on the 31st of October, exactly seven months from the day of the operation, the mother and child doing remarkably well." The patient, therefore, must have been pregnant two months at the time the operation was performed, and notwithstanding so grave an operation and the use of the uterine sound, no miscarriage occurred, and utero-gestation was completed.

CASE 221. Fibro-Cystic Tumour—Uterine and Ovarian; Tapped four times; Operation April 19, 1870; Tumour not removed; Recovery.

June 22, 1868. At the request of Dr. F. F. Maury, Dr. Atlee examined Mrs. H., æt. thirty-four years. Menstruation commenced between twelve and thirteen years of age, and has always been regular and rather profuse. She married at the age of sixteen, had one child at full period, and a forced abortion at three months, twelve years ago.

One year ago she noticed an increase in the size of the abdomen, but as she was enlarging over her whole person, she attributed it to fat. Two or three months ago she discovered a hard tumour in the right groin as large as an apple. It was hard and immovable, and has gradually increased in size.

The abdomen is uniformly enlarged to the size of a woman seven months pregnant. The enlargement is diffused, not central as in pregnancy. The abdomen is soft, elastic, and the percussion sound is resonant almost everywhere. By sudden, deep pressure in the right iliac region, a hard tumour can be struck. It seems to be submerged in fluid. The os tincæ is far back against the rectum, and the sound enters three inches. The tumour, uterus, and sound all move in unison. The right leg is slightly swollen.

Diagnosis.—Uterine tumour with ascites.

September 1. The patient called at Dr. Atlee's office again. The fluid in the abdominal cavity has increased considerably, though there has been no increase in the size of the tumour. Suggested to Dr. Maury the propriety of tapping, should the fluid continue to accumulate.

February 1, 1869. The patient came under Dr. Atlee's care. After her last visit she increased rapidly in size, and Dr. Maury tapped her in October of four gallons of fluid of an amber colour. At that time both

limbs were swollen. Now the left is swollen, and the right emaciated. The right side, after the tapping, continued to be enlarged.

On examining her, a great change was found to have occurred. The left side of the pelvis was now occupied by a cystic body, crowding the uterus to the right and upwards, entirely out of the pelvis. The os could just be reached by the finger behind the right acetabulum, and the sound, introduced into the uterus, could be felt through the abdominal wall on the right side. The original hard tumour occupied a more central position, while above it, in the right umbilical and lumbar regions, could be seen and felt another cystic tumour. The upper portion and left side of the abdomen was occupied by peritoneal fluid, which could be plainly fluctuated. Menstruation was still regular.

Diagnosis.—Cystic degeneration of the uterine fibroid, or the latter complicated with ovarian tumour.

March 14. The abdomen greatly distended, the umbilicus pointing out like a large umbilical hernia. The only resonant percussion sound is in the highest part of the epigastrium. Large cystic bodies can be felt in both sides through a large accumulation of ascitic fluid. The condition of the pelvis and uterus is the same.

Assisted by Dr. Burpee, Dr. Atlee tapped her to-day. From the cavity of the peritoneum twenty-two pints of almost pure blood were drawn off. This had evidently accumulated slowly since the first tapping, as it was entirely devitalized, and its withdrawal made no impression on the pulse. Before removing the canula a careful examination was made, and two large cysts could be distinctly traced out, one on each side and united in the centre. The trocar being introduced again, it was passed into the right cyst and seventeen pints of thick, mud-coloured, gelatinous fluid, evidently ovarian, drawn off. Both cysts diminished greatly in size, as if their septum was perforated. Other cysts remained and kept the abdomen still much enlarged. She has missed two menstrual periods.

Diagnosis.—The cystic portion of the tissue ovarian.

May 30. She had no unpleasant symptoms after the tapping, and the progress of the tumour, as well as the ascites, seemed to have been arrested, so that her general health and strength were improved. This state of things continued during the summer.

December 23. Latterly the disease assumed more activity. Menstruation has not recurred. She is now entirely filled up with a multilobular mass, the cysts jutting out here and there, giving a very irregular shape to the abdomen, very little ascitic fluid can be detected, and what there is seems to be accumulated in a large pouch of the skin at the umbilicus. This fluid can be pressed into the cavity of the abdomen through a hernial opening two or three inches in diameter, through which the whole length of the index finger can be passed between the cysts and walls of the abdomen. The patient was solicitous for an operation, but Dr. Atlee could not countenance it.

January 17, 1870. The patient's strength has rapidly declined in consequence of great suffering, loss of sleep, and still greater development of the tumour. The vulva and lower limbs are enormously swollen, and the œdema extends over the lower portion of the abdomen. In company with Drs. Mears and W. Lemuel Atlee, she was tapped of twenty-one pints of opaque pus-coloured fluid from the cyst, and one pint of bloody serum from the peritoneal cavity. Dr. Mears examined the fluid, and reported it

as albuminous, containing a large quantity of fat globules and compound granular cells.

April 11. After the last tapping the patient improved a good deal in her general health and comfort. To-day she was tapped again of sixteen pints of ovarian fluid, and eleven pints of peritoneal fluid.

19th. The patient being very solicitous that something more should be attempted than had been, Dr. Atlee decided to explore the abdominal cavity after having repeatedly assured her of, first, the great improbability of the removal of the tumour, and, next, of the unpromising results should it be removed. The same statement, and the diagnosis, were made to the gentlemen assembled to assist in the operation: These were Drs. Mears, Burpee, Hoffman, W. Lemuel Atlee, Rex, and Willard, of Philadelphia, and L. D. Waterman, of Indianapolis, Indiana.

An incision, two inches in length, was made through the abdominal wall immediately down upon the tumour, which gave exit to several pints of bloody fluid from the cavity of the peritoneum. Passing the index finger through the opening, the cavity of the abdomen and the tumour were examined, and it was found that strong adhesions existed extending from one superior spinous process to the other along the whole brim of the pelvis in front involving the bladder; that the uterus, the uterine fibroid, and ovarian cysts were all agglomerated into one mass, and firmly fixed by important adhesions; and that it would be impossible to proceed with the operation without fatal results. Before closing the wound the cysts were tapped of several pints of pus-like fluid. The wound was closed by four sutures.

In consequence of the extensive ascites in this case, Dr. Atlee suspected the existence of a hydatid-like formation in one of the cysts, referred to in a former case, from which the fluid escaped into the peritoneal cavity. Upon examination this cauliflower surface on the top of a cyst to the left of the umbilicus, was found, and the attention of the gentlemen present was directed to it.

The patient recovered from the operation rapidly, and was in much better health after than before it. The umbilical pouch contracted, and the opening became filled with a firm mass of shrivelled skin.

June 24. The patient continues to be improved in size, health, and general appearance, and takes daily excursions in the open air. The uterus has descended lower in the pelvis. The cystic portion of the tumour, however, is getting tight and painful. Eight or nine pints of purulent fluid were removed by tapping it.

After this the patient went to Altoona to spend the summer, and was lost sight of. It was learned, however, that she died on the 7th of August, one week after being tapped.

CASE 222. Unilocular Ovarian Tumour: Pelvic Adhesions: Operation May 26, 1870; Incision two and one-half inches long; Recovery.— March 18, 1870, Mrs. M., of this city, widow, consulted Dr. Atlee. She is forty years old, and commenced to menstruate at the age of fifteen years, and has always been regular. She was married at the age of twenty years, has had two children, the youngest being sixteen years old. She has also had two miscarriages at two months, the last occurring four years ago. She menstruated regularly three weeks ago.

Two years ago she noticed that her clothes were getting tighter, and she gradually increased in size from that time. She is now larger than a woman at full period of utero-gestation. The shape is uniform. The

abdomen is smooth and elastic. A small hard deposit, painful to the touch, is discoverable in the left side of the epigastrium. Fluctuation perfectly distinct. Percussion sound resonant in the left hypochondrium. The uterus is pushed back in the pelvis, is flexed, and admits the sound with pain, two and one-half inches, and is quite movable.

Diagnosis.—Unilocular ovarian tumour of the right ovary.

May 26, 1870. Ovariectomy was performed, the following gentlemen being present: Drs. Mears, Burpee, Hoffman, W. Lemuel Atlee, Burmeister, Curtin, and Price of Philadelphia, and Jameson of Reading. An incision two and one-half inches in length was made through the walls of the abdomen, the cyst exposed, and tapped of eighteen pints of a very clear, brilliant, light, straw-coloured fluid. There being no parietal adhesions, so soon as the cyst was emptied it was drawn out of the small incision. A broad attachment, however, consisting of a membranous sheet and expanding over the base of the tumour on the left side, bound it to the anterior cavity of the pelvis. This was shelled off from the tumour, and left the latter attached to the right side of the uterus by a thick, heavy, vascular, and rather short pedicle. This was crowded into the three-quarter inch space of Dr. Atlee's new clamp, and severed.

The other ovary was examined and found healthy. One of the membranous shreds, containing vessels, was tied in a knot, cut off and returned into the pelvis. There was no bleeding. The cavity of the abdomen was not touched excepting to feel the condition of the uterus and remaining ovary. Two sutures finished the dressing.

The tumour was unilocular, with a small secondary deposit in its upper wall. It was the right ovary, and weighed with its contents about twenty pounds. Recovery rapid.

ART. XV.—*Severe Wound of the Skull; Recovery.* By R. W. ERWIN, M.D., of Athens, Ohio.

W. C., æt. 24, mulatto. Has always been strong and healthy, and with the exception of an occasional drink is temperate. He states that a few years ago he fell from a railroad bridge to the ground, a distance of forty feet, receiving an injury over the parietal suture, which caused some exfoliation of the bone. This soon healed up, and gave no further trouble.

January 31, last, was kicked by a newly-shod mule over the left parietal bone. The cork was long and sharp, and penetrated into the brain tissue, breaking up the latter, so that it oozed through the wound. He was knocked by the blow, and while in that condition he was struck in the left hypogastrium. There was only slight loss of consciousness for a few minutes. I saw him in an hour after the accident; he experienced little or no pain; pulse regular, full and natural, and no symptoms of compression or concussion. The wound through the scalp was smooth, and about three-fourths of an inch in length, and filled with disorganized brain matter. The skin immediately above the ear on the same side was bruised by the other cork. A probe introduced in the superior wound glided almost by its own weight to the depth of a full half inch below the internal

plate. The opening in the skull was about three-quarters of an inch in length, by one-third to one-half inch in width. There was no evidence of fracture or depression of the adjacent bone; no fragments of bone could be felt. I advised the trephine at once, but the patient was unwilling to permit it. After consulting with Dr. E. G. Carpenter, it was thought best to urge the matter no further, but await the development of symptoms of compression. The hair was then cut close to the skin; scalp wound enlarged; head elevated; room darkened; patient put upon low diet; cold water dressing applied to wound, and bowels to be kept gently open with sulphate of magnesia.

Feb. 1. Rested well; no headache; pulse 75, soft and full; is hungry; has pain in the left hypogastric region, limited to the part struck; ordered poultice over the seat of pain.

2d. Pulse full and soft, ranging from 65 to 70; no pain in the head. The application of the poultice was followed by complete relief.

3d. No fever or pain; very little suppurative discharge; warm water dressing to take the place of the cold.

5th. Wife said on my entrance, "Hasn't known anything for over an hour." Pulse 48, soft, full, and regular; eyes shut; pupils normal; breathes easily and slowly; bowels said to have been moved to-day as usual, and he eat only a little broth in the morning. A solution of salts being near, I put in his mouth with a spoon about a drachm to test his ability to swallow. He made the attempt, but was immediately seized with a severe convulsion lasting nearly a minute, during which the limbs were rigid; head drawn backwards; stertorous breathing followed, which continued perhaps five minutes, followed by active delirium, when three strong men failed to hold him in bed. He gradually became quiet, and in an hour was semi-conscious; pulse 60, full, soft, and weak; no discharge from the wound. At 7 P.M., began to trephine, assisted by Philip Zenner, an office student. On attempting to make the incisions, found that the patient was unable to bear the pain, and in fear of inducing convulsions resorted to the chloroform, which required a much longer time than usual for anaesthesia. The chloroform was suspended as soon as he came under its influence. I made a Λ incision with the angle at the superior part of the wound, the left side being an extension of the wound downward, while the right was carried backward and downward about two and a half inches. The scalp was quickly reflected off; hemorrhage was moderate. At this juncture it became evident the patient was rapidly sinking; pulse at the wrist very small, weak, and slow, and in a few seconds ceased; respiration very slow; lips pale; surface cold; jaws fixed. By an active employment of stimulants, frictions, etc., he rallied a little. This was followed by vomiting and ejection of a large quantity of undigested matter, among which were many pieces of hard apple. I now learned that, feeling well in the morning, he had indulged his appetite freely. It was fully an hour before he rallied sufficiently to warrant a continuance of the operation. The periosteum was then reflected back from the bone at the lower and posterior part of the opening in the skull, and the trephine planted upon the spot; no anaesthetic used. A little time was spent in getting through, as the skull was very thick and hard. On removing the circular piece, a fragment of the external plate was discovered, which had been driven in under the external plate. The internal plate, with most of the diploic structure, had been broken off on that side (posterior), and the fragments driven into the brain substance, or upon the meninges.

Two pieces, each as large as a man's thumb-nail, were perpendicular to the cranial bone at their remote borders. One of these pieces penetrated the cerebral tissue. Under the portion removed with the trephine, and extending down under the solid bone, was a large dark clot which was removed, and the small piece of periosteal membrane which had been turned back, was returned to its place over the aperture made by the trephine. The reflected scalp was next put *in situ*, and secured by two stitches through the lips of the posterior incision. These were supported by narrow bands of court-plaster. He sustained apparently no shock from the operation; was rational the whole time; pulse 70, and soft; ordered water-dressing, cold or hot, whichever should prove most agreeable; perfect quiet, rest; diet of broth, gruel, or toast.

6th. A.M. Slight headache during the night, but not sufficient to break his rest; pulse 65, soft, full, and regular; to have sulph. magnesia in case his head aches. 5 P.M., pulse 80, quick and full, not hard; temperature $100\frac{1}{2}^{\circ}$. While eating this afternoon, pain in his head recurred, upon which he was given Epsom salts; ordered twenty grains of calomel; when bowels are moved, to have one-sixth of a grain of morphia; odour from wound offensive; ordered flaxseed poultice, saturated with weak solution of carbolic acid; strips of court-plaster removed.

7th. Quite comfortable; had one motion of bowels in the night. Pulse 55, full, soft; temperature normal in axilla; suppuration going on through the edges of the wound; no offensive smell. Treatment continued.

8th. Pulse 80, of greater strength than yesterday; temperature 99° under tongue; wound looks well; bowels were moved yesterday in afternoon two or three times by the calomel; had two movements of bowels to-day; to have one-sixth of a grain of sulphate of morphia, to check the bowels and allay irritation.

9th. Pulse 72; feels first rate.

11th. Had a little pain over the insertion of the sterno-mastoid muscle last night, relieved by tincture of camphor. Pulse 72, regular.

12th, 13th, 14th. Doing well; wants more to eat; request denied.

15th. Posterior incision almost united.

16th. Removed stitches.

17th. Sat up half an hour to-day in bed.

21st. Sits up two or three times a day; has walked across the room once or twice; wound almost healed, except at the vertex and lower part of aural incision; at these two points granulations are exuberant.

March 1. A little "proud flesh" still remains at the two points before specified; stick of nitrate of silver applied. Dismissed. At present he is working at his trade; feels well and strong.

ART. XVI.—*Total Inversion of the Uterus; Death probably from Heart-clot; with Remarks on the Source of Danger after Profuse Hemorrhage.* By BENJAMIN WOODWARD, M.D., of Wyandot, Kansas.

JANUARY 10, 1871, I was called to a primipara, 22 years of age—a large, muscular, vigorous woman—who had been in labour all night. The os was but little dilated, though the membranes were inflated. As the pains were

irregular and exhausting the patient, I gave her half a grain of morphia. The head had not engaged and she rested for two hours, then the pains returned with great severity, and lasted for ten hours; at the end of which time the vertex presented, and one long severe pain, lasting fully ten minutes, brought the child, and immediately afterwards the placenta. As I was securing the cord she gave a long-drawn sigh, and in a moment there was a gush of blood which deluged the bed. Feeling for the uterus, it was not contracted in the least. I tried to bring contractions on by grasping the uterus through the integuments, but to no avail. Pressing on the aorta with one hand and the other inserted into the womb, while ice-water was dashed on the abdomen, contractions ensued, but by this time she was blanched, and the pulse was a mere thread. Strong coffee, brandy, laudanum, and, as soon as it could be prepared, beef-tea were given, and she rallied well. She was well bandaged and directions given that *on no account was she to be raised even from the pillow*. Early the next morning I was sent for in haste, and found her pallid, gasping for breath, tossing her arms about, and crying out "my heart, my heart." The uterus was completely inverted, lying between the thighs, and bleeding profusely. With great effort it was replaced, pushed well up, and it then contracted well. It was secured with a compress and T bandage. Pulse 180, irregular and fluttering; heart's action tumultuous, and with the ear over the organ an irregular flapping was heard on every inspiration. The breathing was laborious and gasping. She tried to grasp her heart, clutching at the breast, and cried out from time to time, "I am choking; my heart, my heart!" Soon she began to vomit a glairy, green liquid, which nothing would relieve. From this time to that of her death, five days after delivery, there was the same tumultuous action of the heart; the terrible struggle for breath, and the continuous vomiting made it one of the most painful sights I have ever witnessed. Some twenty hours before death she became comatose. Though strictly forbidden, she had been allowed to get out of bed, and sit on the commode. She was hardly seated when she cried out, "Get me to bed; I am falling in pieces; I am dying!" and the gushing commenced. The womb had become inverted.

Was this not a case of what the late Prof. C. D. Meigs called *heart-clot*? Nearly all writers on obstetrics had pointed out the danger of raising up women who had lost much blood in labour; but it was not till 1849 that this able obstetrician, in an article in the *Medical Examiner* (see No. for March, p. 141), proved the true pathology of such cases. Referring to the well-known fact that in severe hemorrhages the blood last lost is more readily and firmly coagulated than that first poured out, and that what was left in the large vessels more readily coagulated than what had been lost, he writes:—

"Loss of blood produces a tendency to fainting or lipothymia; during an attack of fainting the motions of the heart are enfeebled; the diastole slow, torpid; for the blood moves languidly in both the venæ cavae, pours itself out in a slow current into the auricle, which it sluggishly distends, and sometimes is then instantly converted into a solid clot. If a clot be formed in the right auricle, it will also be formed in the *iter ad ventriculū dextrum*, filling up the cone of the tricuspid valve; and the nucleus of it will cause the coagulum at length to occupy the cavity of the right ventricle, and extend itself to a greater or less distance along the tractus of the pulmonary artery. If the whole pulmonic side of the heart should be perfectly occupied in this way, the

death of the individual would be instantaneous; and I doubt not that many of the examples of sudden death, after delivery in hemorrhagic labours, are produced by the formation of cardio-morphous coagula which form in the instant of a state of fainting or lipothymia."

Two cases of this kind have come under my own observation.

One was that of a soldier of the 22d Ill. Vols., who, at the battle of Belmont, Nov. 7, 1861, was shot in the shoulder. Before aid could be rendered he fainted from loss of blood. The bleeding was arrested, and he lay with others on the ground. When put in a wagon to be taken to the transport he was comfortable; but soon after being raised up he began to gasp and soon died.

The other was also a soldier in the Park Barracks Hospital, Louisville, who had been stabbed in a drunken quarrel. The femoral artery was cut, and he lost much blood. After the artery was ligated he was laid on his cot, and the strictest orders given that he should not be raised up, but in less than an hour he got up; but had hardly got upright when he gasped and fell dead. An autopsy made before the body was cold showed a clot in the right ventricle, extending two inches into the pulmonary artery. It was white, and like very firm jelly.

It is well known that blood taken in the erect position will cause fainting more readily than when lying down. In the case of a woman who has lost a great part of her blood in labour, the remaining blood being easily coagulated, if raised up she either faints entirely, or a clot forms in the heart from which death must ensue, either instantly or in the space of a few days—instantly, if the clot is so extensive as to fill the ventricle, or after a time if it is partial—as we have no known means of dispersing a clot when once formed. Dr. Joy calls these clots polypos conerctions of the heart and arteries, but neither he nor Hope indicates their probable formation from flooding in the accouchée. Professor Meigs shows that a patient who has lost much blood is not safe from this danger as late as seven days after the flooding, deaths having occurred at that late time.

Leaving this phase of the case, I will advert to the inversion of the uterus, and inquire what that may have had to do with the death? Obstetric writers generally ascribe this accident to pulling at the cord. Churchill, however, says: "It may be caused by a relapsed flaccid state of the uterus and its appendages." Of this latter class must have been that of my patient; for the placenta had come off itself, even with the child, and my hand had been inserted into the womb; and when she was finally bandaged it was in its place.

Within the past thirty years I have seen five cases of inversion, in one of which inversion took place during a severe after-pain; though how that could produce it I am unable to explain. In one, it was caused by a midwife pulling an adherent placenta, and the woman died of hemorrhage before I reached her.

It is reasonable to conclude that in the case of a woman exhausted by long, severe labour, and then by loss of blood, the tissues should be so relaxed, that when seated on a vessel and straining to micturate, the organ should become inverted.

The severity of "the shock" is spoken of as endangering life, and I have no doubt but that it had much to do with the death of my patient. Have we any means or remedies which can avail to save life after the clot is formed in the heart? The pathology of the case leads to a negative answer. Before alkalies or other remedies could break down the plastic state of the blood the patient is dead, or in such a condition that death must ensue. Prof. Meigs thinks that in nearly every case of fainting from being raised up after severe hemorrhage, there is a tendency to clot-formation, and that a sudden dash of water, a sharp slap, or anything which gives a sudden start, may force the stagnating blood forward, and thus prevent coagulation; further than this there is no prospect of relief. The disease is one the only sequel to which is death.

I have been thus prolix for the reason that the accident is so rare that it is seldom adverted to, and yet is one of the gravest which can occur. A death from this cause took place in my own practice twenty-five years ago. At that time I did not understand its pathology, and it was not till I read Prof. Meigs's paper that I realized the source of the danger. Since that time it has never been absent from my mind when with a woman in labour, or a badly wounded man in the field or in hospital.

ART. XVII.—*A Rare Malformation in the Brain.* By W. W. KEEN, M.D., Lecturer on Anatomy in the Philadelphia School of Anatomy.

In demonstrating a brain recently to one of my dissecting classes, I met with the following malformations, the first of which I believe to be very rare. In my own experience I have never met with it before, nor, so far as I have searched, do I find any allusion to such an anomaly.

1st. The *fornix*, instead of being solid from side to side, consisted of two lateral halves with a triangular space between them. This space was $1\frac{3}{8}$ inch long by $\frac{3}{8}$ of an inch wide. It began just at the posterior border of the fornix, where the two posterior pillars were barely united, and reached nearly to the anterior pillar, where also slight union existed between the two halves. Through the opening the velum interpositum was seen.

2d. The *fifth ventricle* was exceedingly large—the largest I have ever seen. It measured $\frac{5}{8}$ of an inch wide, and $1\frac{3}{8}$ inch long. Neither this ventricle nor the lateral ventricles were in any way diseased or distended with fluid. The dura mater corresponding to the right parietal bone was ossified in its outer layer. The anomaly noted in the fornix points doubtless to its normal origin and development by two lateral halves whose separation is marked usually by the divergence of the anterior and posterior pillars only.

TRANSACTIONS OF SOCIETIES.

ART. XVIII.—*Summary of the Transactions of the College of Physicians of Philadelphia.*

1871. Feb. 1. *Report on Meteorology and Epidemics.*—Dr. Wm. L. WELLS read the following report on meteorology and epidemics for 1870:—

Before entering on my report on meteorology for 1870, I must premise by stating that in the calculation made in my report for 1869 allowance must be made for the fact that at that time a census of Philadelphia had not been taken for nearly ten years, and that, consequently, the number of inhabitants could not be arrived at accurately. I made an over-estimate, as is shown by the fact that, by the census taken last year, the population of Philadelphia was then only 674,022. A correction of the estimate made in last year's report will therefore be necessary. The error was caused by my having computed the population on the theory that the rate of increase in the past ten years had been equal to that of the preceding ten years, whereas (contrary to general expectation) it was much less.

The total number of interments returned by the Board of Health for 1870 was 16,750. This indicates an increase of 1964, or 13.28 per cent. over 1869, and gives one death to every 40.24 inhabitants, or 2.41 per cent. Deducting those who died elsewhere, and were counted because buried in Philadelphia (611 in number), we have 16,139—one death in 41.76, or 2.39 per cent.

Of the deaths recorded, there were 8717 males and 7963 females, showing an excess of 824 males, or 10.35 per cent. The average of deaths for each quarter of the year is 4187; for each month, 1396; for each day, 46. The first quarter there were 4401 deaths, the second 4245, the third 4902, and the fourth 3202. The third quarter, which shows the highest mortality, had 53 per cent. more deaths than the fourth quarter, which had the fewest deaths.

The mortality at the Blockley Hospital, connected with the Almshouse, was 599. That of the coloured population of the city, 1081.

When we compare the total mortality in 1870 with that of the nine preceding years, we find that in

1861 there were	14,468 deaths.
1862 " 	15,097 "
1863 " 	15,788 "
1864 " 	17,582 "
1865 " 	17,169 "
1866 " 	16,803 "
1867 " 	13,933 "
1868 " 	14,693 "
1869 " 	14,786 "
1870 " 	16,750 "

showing that in spite of the increase of 13 per cent in the mortality of 1870 over that of the preceding year, there yet remain three years—1864, 1865, and 1866—with a still greater mortality.

One of the diseases which contributed the most to the increased number of deaths in 1870 was scarlatina, which caused 956 deaths, 157 more than in 1869, and far more than in any preceding year. This fearful scourge of the young moderated in violence, however, very much in the last few months of the year. In May it caused 166 deaths, and in the following months 90, 53, 35, 16, 14, 26, and 31.

A classified table is appended, showing the mortality from all the principal causes of death as compared with 1869; and another, showing the mortality in the different months and at different ages.

The meteorological statistics of this report are taken from the record kept at the Pennsylvania Hospital.

The year 1870 was remarkable for its high temperature, and this was caused not only by an increase in the temperature of a few months, but the thermometer rose unusually high in both winter and summer—the only month in the year which was much colder than usual being March, the mean temperature of which was $37^{\circ}.87$ Fahr., or $3\frac{1}{3}^{\circ}$ below the average, and $3^{\circ}.20$ below the mean of January, which last month differed more from the average temperature than any other in the year, being 9° above the average. It was the warmest January since 1790. In consequence of the unusual heat many plants began to grow, and were injured by the first severe frost in February.

The mean of the winter of 1869–70 was $37^{\circ}.17$. It was the warmest winter since 1828.

On the 8th of May there was a violent hail-storm, which did an immense amount of damage. The hail-stones were very large; one which fell at the Pennsylvania Hospital was found to weigh 1 oz. $5\frac{1}{2}$ dr. troy.

The summer of 1870 was unparalleled for its high temperature, as may be seen from the following table, giving the heat of the hottest summers since 1825.

The mean of the summer of 1825 was $74^{\circ}.83\frac{1}{3}$ Fahr.; that of 1831 was $77^{\circ}.33\frac{1}{3}$; of 1838, $75^{\circ}.66\frac{2}{3}$; of 1856, $75^{\circ}.58\frac{1}{3}$; and of 1870, $78^{\circ}.88$. Last summer was, therefore, more than a degree and a half hotter than the hottest of all before, and more than 6° hotter than the average for thirty-nine years, which is 72° . In 1798 we had a hotter July, the mean being 81° , to $80^{\circ}.63$ in 1870. We had a hotter August in 1863, when the mean was $79^{\circ}.46$, to $78^{\circ}.77$ in 1870. We have, however, never had such a hot June (the mean was $77^{\circ}.35$), and never such a hot summer, taking the mean of the three months. During June the thermometer rose above 90° on nine different days, during July on thirteen different days, and during August on eleven different days—a total of thirty-three days, or more than one-third of the entire summer season. There were ten days in which the thermometer reached 94° , and on the hottest day (July 17th) it reached 97° .

This period of unusual heat was extended over both the months immediately preceding and those succeeding the summer. There was no frost from the first of April until November.

The diseases, accordingly, which are either directly caused by a high temperature, or which, although they have not heat for their cause, require it as one of the conditions for their development, we shall find caused many more deaths than usual. There were 52 deaths from sun-

stroke to 12 the year before, and 1002 deaths from cholera infantum to 885 the year before—the deaths from this latter cause being found to increase or diminish in number as the thermometer rises or falls.

In August and September there were a few cases of yellow fever, a disease from which we had been free for many years. Before any cases originated in the city, there was a good deal of the disease at the Lazaretto, several miles down the Delaware, caused by the arrival there, June 29th, from Jamaica, of the brig *Home*, on which there had been during the voyage two cases of yellow fever, one of them fatal.

On her arrival off the quarantine station, the brig anchored about 400 yards from the landing, was thoroughly disinfected, and three lighters were employed to discharge the cargo. On July 14th her position was changed to the adjacent government wharf, 300 yards from the hospital building, 250 yards from the physician's house, and only 140 yards from a house occupied by a family named Pepper. While the brig was in her first position, and for three days afterward, eighteen days in all, eight cases of yellow fever originated, the first being the pilot of the brig *Home*, and the others being the second mate and two sailors of the brig, and four persons connected with the lighters used for unloading the cargo. Of these eight cases, four died. This brings us to July 17th, two days before the completion of the discharge of the cargo; and only one mild case of the disease occurred subsequently in any of those who were immediately connected with the vessel.

On the 22d of July, five days after the brig moved from its original position to one close to the shore, two cases of fever occurred in the house nearest to it (140 yards off), and toward which the wind was blowing from the ship. Another case occurred on the following day, another August 1st, two more August 6th, and the last on the 8th of August, making in all seven cases, of which five were fatal, in a household of thirteen. Even the other six were a little sick at the same time, but without any defined symptoms of the disease.

Dr. Thompson, the Lazaretto physician, was attacked with yellow fever August 2d, and died on the 10th. He, of course, had been exposed to the cause of the disease in its original source, the *Home*, as well as in his own house, 250 yards from its new position, and in the quarantine hospital, which was 50 yards further off. On the same day on which he was attacked, the wife of the steward of the hospital was taken sick, living only five days afterward; and on the 3d of August (the following day) another case, likewise fatal, originated in the hospital. On the 4th and 5th of August, the wife and daughter of Dr. Thompson were taken sick, but both recovered, and on the 6th three more cases originated in the hospital, all of whom died. After this, the force of the disease would seem to have moderated, as only four more cases originated in the quarantine grounds, and only one of these died, and he a man already broken down by a recent attack of smallpox. The brig *Home* had left its position at the wharf, and removed to one much further off some days before this time.

We see here, therefore, in a population of about one hundred exposed to the disease, twenty-eight cases,¹ of which sixteen proved fatal, and this without counting the two cases of the disease which occurred at sea.

¹ Only one of those attacked was coloured, and he recovered, although there were in all seventeen coloured persons exposed, and most of them in the brig itself.

Of the above cases, seven were attended, during part of the disease, in various parts of the city of Philadelphia—in Kensington, West Philadelphia, etc.—and one was treated for a day or two in Swanson Street, near Shippen Street wharf, (where the fever afterward broke out,) leaving there July 19th, when he was removed to the Municipal Hospital, in the extreme northwestern part of the city, where he at last recovered. It was not, however, until August 8th, three weeks after this, that the first case of yellow fever originated in the city. This case was that of a custom-house officer, who had been on some vessels which had come from infected ports, on none of which, however, any cases of yellow fever had occurred. He had also been in the neighbourhood of one of the lighters which had on it part of the cargo of the brig *Home*, but it was one on which no cases of fever had occurred. The brig *Home* itself was anchored half a mile from Shippen Street wharf (where this man was taken sick) for one night, August 4th; but it was to the windward, and consequently no very satisfactory explanation can be given of the origin of the disease in this case. There were in all, within half a mile from the place where this man was attacked and between August 8th and September 8th, seventeen cases, thirteen of which proved fatal. They were all in one of the most crowded and filthy portions of the city, but no two cases occurred in the same house, and no case can be traced to another as its cause.

Yellow fever, therefore, as we see from last summer's cases, will originate and spread in a city in a manner very different from such a disease as smallpox. A man who has been exposed to the yellow-fever atmosphere from a vessel several miles off at quarantine is sick for a day or two in Swanson Street, and three weeks afterwards, the vessel itself, thoroughly disinfected, is anchored for one night at a distance of half a mile from the same street, with the wind blowing off shore. These are the conditions; let us look at the results: Seventeen cases and thirteen deaths occur, and all within half a mile from the place where the first case occurred, and less than a mile from the place of anchorage of the brig. But when we look more closely, we find that no one of the five men connected with the brig at that time was taken sick, no one in either of the two houses in which the first case lived during the progress of the disease was taken sick, no one in any of the adjoining houses, and that no two of all the cases were in the same house. On the other hand, they were all exposed to an atmosphere which for weeks had been excessively hot, and that in a neighbourhood one of the worst in the city for overcrowding and filth. We cannot but be struck, therefore, with the analogy of this disease with the malarial fevers,¹ which strike down persons exposed to the malarial emanations—whatever they may be—independently of contact with any other person already diseased; and we must also observe the marked difference between it and a contagious disease like smallpox, which can in such a vast majority of cases be traced from house to house, or from man to man, the poison multiplying itself within the system, so that one drop of the virus placed under the skin of a healthy man will cover him in a few days with pustules enough to infect a city.

The peculiar poison of smallpox infects, and while infecting, multiplies itself, and that in any climate or season of the year. The poison or germ

¹ Of course, analogy only, and not identity, is here meant.

of yellow fever is indeed equally fatal, but finds the most favourable conditions for propagation, not in the human body, but outside, in filth, with animal excretions exposed to great heat.

An epidemic which created probably less alarm than that of yellow fever, but caused in the past year a much greater mortality, was that of relapsing fever. It was prevalent chiefly in the portion of the city between Lombard and Catharine and between Fifth and Eighth Streets, although it was found to a certain extent in localities very far removed from there. Dr. Goodman, the port physician of Philadelphia, estimates the number of cases of this disease at about 5000, with 200 deaths up to September 1st, although only 152 deaths were reported to the Board of Health from that cause up to that time.

This fever occurred, as an epidemic for the first time during the past year, in Philadelphia and also in New York.

Relapsing fever had, however, been previously seen in Philadelphia. The first case was recognized by Dr. George B. Wood, Emeritus Prof. of Theory and Practice of Medicine in the University of Pennsylvania. It was in a patient who had come here from England, through Canada. Subsequent to this; in June, 1844, there were fifteen steerage passengers who had come here from Ireland in a Liverpool packet, and were treated for this disease in the Blockley Hospital by Drs. Wm. Byrd Page and Meredith Clymer, Dr. Mayburry being the senior resident physician of the hospital at the time. These cases were all reported in the *American Journal of Medical Sciences*. Dr. Wm. Pepper had several cases from the same vessel under his charge at the Pennsylvania Hospital at the same time. The disease, however, at that time did not spread. It being, therefore, practically unknown to the profession here, it is not to be wondered at that it was not recognized at first; at least, by the majority of physicians. In the *American Journal of Medical Sciences*, October, 1870, Dr. John S. Parry gives an account of several cases—the first of the present epidemic. The first case of all occurred in a narrow, poorly ventilated and overcrowded alley near Third and Arch. The date was September 8, 1869. Dr. A. Clark, in the March number of the *N. Y. Medical Record*, reports the earliest cases which occurred in New York. They were nearly two months subsequent to the cases of Dr. Parry. The disease was, however, generally recognized as an epidemic first in New York—probably, as Dr. Goodman remarks, on account of the greater facilities the New York Board of Health have of becoming early acquainted with contagious diseases, through their admirable system of medical sanitary inspection.

Although relapsing fever is undoubtedly contagious, yet the first cases which occurred in Philadelphia were scattered about in portions of the city far apart from each other, at nearly the same time, and without any known connection. This is analogous to the manner in which cholera often spreads. It would seem as if an epidemic atmosphere, containing the germs of the disease, had passed over the Atlantic Ocean, and, without being brought by any ship, had gradually settled down in this country, increasing slowly in power. Dr. Harris, however, of the New York Board of Health, thinks that the disease was brought there in ships, and spread by contagion only.¹

¹ See Medical Record, March 1, 1870.

The first death reported to the Board of Health in this city as from relapsing fever in 1870 was on the 26th of February; it occurred in Frankford. The second and third deaths were at the Almshouse. In the week ending March 26th there were 4 deaths, all in the Almshouse; in the next week, 8 deaths, 5 of them in the Almshouse and 3 scattered—2 in the Tenth Ward, three or four squares apart, and 1 in the Second Ward. In the week ending April 16th there were 4 deaths—3 in the Almshouse and 1 in the Third Ward. Most of the cases which occurred in the degraded portion of the city, where the disease was most severe, were removed either to the Philadelphia Hospital, Blockley, or to the Municipal Hospital. The most active measures for disinfection and cleansing were taken by the Board of Health, and by the kindness of Dr. Swann, the energetic president of the Fountain Society, several fountains were placed in the neighbourhood where the disease most prevailed, thus improving very much the sanitary condition of the locality. I cannot conclude my report on the subject better than by giving an extract from the excellent report of Dr. Goodman to the Board of Health.

“The origin of the fever in this city must remain a matter of speculation. The causes of its becoming epidemic were more apparent; overcrowding, filth, destitution, impoverished and irregular diet, and intemperance, formed the conditions necessary to the propagation of the disease. The fever was felt most severely where these conditions were most decided.

“In regard to nationality, the fever was almost entirely confined to coloured and Irish, or the descendants of the latter. During June and July, of 295 patients sent to hospital, only 63 were born in the United States, and these mostly of Irish parentage, 131 were born in Ireland, 3 in Germany, and 128 were coloured.

“In regard to the contagious nature of relapsing fever, I have every proof necessary to establish it beyond a doubt. I will give a few examples. Lodging house, 707 South Broad Street, locality healthy, house filthy to an extreme degree, third story rooms (one 8 by 12, and one 12 by 18), occupied by nine grown persons. The wife nursed a brother sick with relapsing fever, who was brought from Alaska Street, where the disease was most severe. Five of the nine contracted the fever after a variable period of incubation, and all were finally sent to the hospital. A healthy girl from the neighbourhood visited these rooms while the sickness continued, contracted relapsing fever, was isolated, and no contagion followed. House No. 1121 Christian Street was occupied by 18 persons, in small rooms, locality healthy, house overcrowded and dirty. The first case was a young man who was in the habit of staying out from Saturday until Monday. He came home on Monday with fever; it went through his family of six, then to other families, until thirteen had the disease. The last was a healthy woman who was hired to clean the house July 5th, and on the 9th was sent to the hospital with fever after four days' incubation. Numerous other instances, and those of doctors, nurses, attendants, and ambulance drivers, who contracted the disease, might also be cited to prove its contagious properties.”

I append a table of the deaths from relapsing fever, taken from the reports of the Board of Health.

	Total deaths	Males.	Females.	Coloured.	Under 2 years.	2 to 5	5 to 10	10 to 15	15 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	In the Alms-house	In the Municipal Hospital
March,	15	14	1	8	..	..	..	1	1	6	5	2	..	..	..	11	..
April,	10	8	2	6	..	..	..	..	..	3	2	1	3	1	..	7	..
May,	46	37	9	32	..	..	..	1	1	7	15	12	4	5	1	20	16
June,	46	28	18	30	..	1	1	3	3	7	10	7	8	6	..	6	27
July,	26	19	7	17	1	..	..	..	3	4	7	8	3	..	..	3	14
August,	9	7	2	7	..	..	..	1	..	4	3	1	..	..	..	..	7
September,	2	2	..	2	..	..	..	..	..	2	..	..	..	..	..	1	1
October,	4	3	1	2	..	1	..	..	..	1	2	..	..	..	..	1	1
November,	2	1	1	1	..	..	..	..	..	1	1	1	..	..	..	..	1
December,	2	2	..	2	..	..	..	..	..	1	..	1	..	..	..	2	..
Total,	162	121	41	107	1	2	1	6	8	35	45	33	18	12	1	51	67

In conclusion, I would remark that while in London, Paris, and Vienna, the maximum of intensity of zymotic diseases is in winter, and the minimum in summer; in Philadelphia, in 1870, this was not the case, the maximum being in the spring, and that not only in these diseases taken collectively, but in most of the principal ones, including measles and scarlet fever taken singly. The minimum in Philadelphia was in the autumn, October showing the least mortality, and next to that, September.

Of the individual zymotic diseases, puerperal fever alone shows a greater mortality in winter than in any other season, and that only exceeds by one the mortality in spring.

Zymotic Diseases.

	1869.	1870.		1869.	1870.
Typhoid fever . . .	388	412	Scarlatina . . .	799	956
Typhus (spotted, &c.) . .	88	109	Pertussis . . .	74	105
Malarial fever . . .	50	59	Diphtheria . . .	175	172
Yellow " . . .	—	13	Croup . . .	237	316
Puerperal fever . . .	18	29	Erysipelas . . .	50	58
Relapsing " . . .	—	162	Cholera . . .	9	7
Varicella . . .	6	9			
Varicella . . .	2	—	Total . . .	1981	2455
Rubeola . . .	85	48			

Results of Poisoning.

	1869.	1870.		1869.	1870.
Hydrophobia . . .	7	1	Mania-a-potu . . .	48	56
Alcoholic intoxication . .	42	38	Syphilis (adults) . . .	8	13
			Total . . .	105	108

Alteration of the Blood.

	1869.	1870.		1869.	1870.
Anæmia and chlorosis . . .	22	22	Pyæmia . . .	39	43
Leucocythæmia . . .	—	3	Scurvy . . .	1	1
			Total . . .	62	69

Constitutional Diseases.

	1869.	1870.		1869.	1870.
Rheumatism . . .	24	14	Tubercles of mesentery . . .	631	698
Gout . . .	3	3	Cancer . . .	232	261
Tuberculosis of brain (in- cluding dropsy of brain) . .	174	133	Scrofula . . .	85	80
Tuberculosis of lungs (in- cluding cases reported as hemorrhage from lungs) . .	2040	2374	Syphilis (constitutional) minors . . .	13	10
			Total . . .	3202	3573

Diseases of the Nervous System.

	1869.	1870.		1869.	1870.
Inflammation of brain . . .	367	418	Softening of spinal cord . . .	2	—
Apoplexy	181	240	Paralysis	206	226
Congestion of brain . . .	316	378	Tetanus	28	44
Effusion on brain	50	56	Epilepsy	25	34
Other, or non-specified dis-			Insanity	5	7
ease of brain	72	112	Convulsions	647	733
Softening of brain	57	79	Puerperal convulsions . . .	25	23
Inflammation and conges-			Hysteria	1	—
tion of spine	4	11	Chorea	—	5
Disease of spine (kind not					
stated)	22	23	Total	2008	2389

Diseases of the Circulatory System.

	1869.	1870.		1869.	1870.
Inflammation of heart . . .	34	36	Syncope	4	4
Fatty degeneration of heart	11	13	Aneurism	5	13
Dropsy of heart	35	33			
Neuralgia of heart	24	15	Total	587	618
Other, or non-specified dis-					
eases of heart	474	504			

Diseases of the Respiratory System.

	1869.	1870.		1869.	1870.
Disease of glottis	1	2	Dropsy of chest	58	56
Laryngitis	30	32	Asthma	31	24
Ulceration of larynx . . .	2	—	Pleurisy	16	17
Obstruction of trachea . .	1	—	Emphysema	10	10
Bronchitis	165	161	Empyema	1	2
Catarrhal fever	22	19			
Congestion of lungs	151	154	Total	1296	1289
Pneumonia	808	812			

Diseases of the Digestive System.

	1869.	1870.		1869.	1870.
Tonsillitis and disease of			Dyspepsia	1	2
throat	14	28	Obstruction of bowels . . .	38	33
Sore mouth	11	10	Peritonitis	100	95
Stricture of œsophagus . .	3	5	Hernia	18	15
Dysentery	93	82	Worms	2	1
Ulceration of stomach and			Hepatitis and congestion of		
bowels	19	20	liver	58	42
Inflammation of stomach			Other (or unspecified) dis-		
and bowels	223	281	eases of liver	59	89
Other diseases (unspecified)			Jaundice	27	33
of stomach and bowels . .	12	22	Disease of spleen	—	2
Diarrhœa	175	191	Dropsy (abdominal and va-		
Congestion of bowels . . .	2	3	rieties not specified) . . .	259	272
Cholera infantum	885	1002			
Cholera morbus	52	38	Total	2074	2277
Hemorrhage from stomach					
and bowels	13	11			

Diseases of the Genito-Urinary Apparatus.

	1869.	1870.		1869.	1870.
Nephritis	23	24	Disease of prostate gland . .	3	1
Diabetes	21	18	Stricture or rupture of ure-		
Degenerations of kidneys			thra	1	1
(albuminuria, &c.)	35	54	Stone in bladder and gravel	1	3
Other diseases of kidneys			Disease of uterus	18	35
(kind not stated)	66	60	Disease of ovary	8	5
Suppression of urine . . .	2	1	Died in childbed	20	12
Dremia	17	21			
Uiseases of bladder	19	35	Total	234	270

Congenital Debility and Malformation.

	1869.	1870.		1869.	1870.
Malformation	15	21	Inanition ² (under 1 year) .	217	214
Debility ¹ (under 1 year) .	374	433	Cyanosis and asphyxia .	124	97
			Total	730	765

Diseases of Skin.

	1869.	1870.		1869.	1870.
Eczema	2	1	Hives	—	2
Disease of skin (kind not stated)	—	2	Total	2	5

Diseases of Bones.

	1869.	1870.		1869.	1870.
Inflammation of bones .	1	—	Caries	16	8
Necrosis	5	5	Disease of hip	9	7
			Total	31	20

Violent Deaths.

	1869.	1870.		1869.	1870.
Burns and scalds	68	58	Murder	18	17
Drowned	103	149	Poisoning	16	6
Casualties	187	191	Rupture of spleen	1	—
Exposure	7	4	Shock	4	2
Fractures	31	14	Struck by lightning	—	2
Gunshot wounds	7	13	Strangulation	6	6
Wounds (nature not specified)	5	3	Suicide	45	25
Heat fever (sunstroke) .	12	52	Suffocation	20	14
Hanging	1	—	Total	531	556

	1869.	1870.
Stillborn	790	822

These tables fail to account for 1082 deaths, 117 of which were reported as unknown to the Board of Health, and some were from the following more or less uncertain causes.

	1869.	1870.		1869.	1870.
Congestion (of what not stated)	7	6	Compression of brain and spine	23	19
Gangrene (of what not stated)	36	38	Concussion of brain	1	20
Hemorrhage (of what not stated)	54	59	Cramps	23	21
Ulcers, abscess, and boils (of what not stated) .	87	79	Old age	480	588
			Teething	32	44
			Tumours	21	38

	1869.	1870.
¹ Debility (over 1 year)	262	376
² Inanition (over 1 year)	65	76

MONTH.	Total.	Males.	Females.	Adults.	Minors.	Boys.	Girls.	STILLBORN.			Under 1 year.	1 to 2 years.	2 to 3.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.
								Males.	Females.	Total.															
January,	1287	650	637	679	608	311	297	43	27	70	280	73	142	58	18	37	143	105	98	103	93	78	51	8	
February,	1348	723	625	670	678	384	294	43	32	75	310	112	134	68	21	32	126	112	116	98	96	75	34	12	1
March,	1766	932	834	871	895	483	412	54	33	87	417	126	192	78	37	45	188	151	150	105	117	101	44	15	
April,	1338	723	615	647	691	384	307	34	20	54	308	95	170	62	28	28	158	124	104	81	64	80	26	9	1
May,	1635	871	764	829	806	427	379	58	32	90	354	110	190	75	33	44	167	173	141	106	104	92	38	6	2
June,	1272	655	617	603	669	346	323	41	30	71	359	80	106	58	34	32	123	130	84	85	89	56	31	5	
July,	1916	1041	875	731	1185	637	548	31	27	58	771	195	95	46	34	44	136	169	112	96	102	71	31	13	1
August,	1891	971	920	656	1235	630	605	46	32	78	779	242	92	45	23	54	149	134	99	87	74	62	44	7	
September,	1095	556	539	521	574	283	308	33	16	49	308	112	64	31	20	39	103	90	87	72	71	61	27	9	1
October,	930	502	428	486	444	253	191	31	25	56	238	61	77	34	10	24	107	94	77	54	66	52	27	7	2
November,	1228	638	590	692	536	295	241	39	26	65	260	71	102	47	18	38	133	117	116	97	86	93	35	13	2
December,	1044	525	519	540	504	262	242	36	33	69	245	62	100	41	24	32	99	92	85	81	65	74	34	10	
Total,	16750	8787	7963	7925	8825	4703	4122	489	333	822	4629	1339	1464	644	300	449	1632	1491	1269	1065	1027	895	422	114	10

Feb. 15. Case of Sclerosis of the Feet and Legs, with Complete Anæsthesia, but not attended by any Locomotor Ataxia.—Dr. WM. PEPPER reported the following case, which presents a very unusual, if not an entirely unique, condition. The patient is a man about 45 years of age; who has always enjoyed general good health, and followed the occupation of an ordinary day-labourer until seven or eight years ago, when, without any special cause, or without any very unusual exposure to cold or damp, although he had always been accustomed to work in the wet and cold, he was seized with an attack of inflammation of the feet, which was called erysipelas by the attending physician. It involved the skin of the feet and of the legs up to about a hand's breadth below the knees. It was attended with redness, swelling, with some heat, and with tingling pain. The heat subsided after a short time, but the swelling persisted, and he noticed soon afterward that the sensation in his feet was becoming impaired. The legs and feet have never returned to their healthy condition, and as the man now presents himself, from about three inches below the tubercle of each tibia throughout the leg and over the entire surface of the feet, the skin is blue; its consistency is greatly increased, its temperature reduced, and the whole member has a hide-bound, indurated character. The nails are brittle, broken, discoloured, and falling off. There is a tendency to ulceration about the joints of the toes, and cutaneous sensibility is absolutely destroyed. To so great an extent is this the case that the man takes pleasure in lighting large pieces of paper and then trampling them out with the soles of his bare feet, and, in doing this, he says that he is not able to feel the slightest sensation of warmth. A galvanic current derived from thirty cells may be passed through the skin of either leg and foot, the positive pole being maintained in contact until the entire derm is destroyed by the caustic action of the current, without arousing the slightest sensation. He can be struck a forcible blow with a cane over the exposed surface of the tibia without his being conscious, except by the shock to his body, of being touched. The toes may be violently trodden upon, and he will not be aware of it. The anæsthesia of the soles of the feet is even more extreme than that of the leg.

This case is sufficiently interesting, it appears to me, in the mere pathological and anatomical point of view. I do not know of any other instance of sclerosis of the legs going on to the entire extinction of sensibility. But the most interesting point in the case is the fact that, despite this entire anæsthesia of the soles of the feet, which is so marked that when the man walks he is entirely unconscious of touching the ground, and, so far as the acquired sensations are concerned, feels as though he were moving through mid-air; he can walk perfectly in the darkest night, or can walk with his eyes tightly closed, without staggering or without any want of co-ordination of muscular motion. In his usual gait he employs a cane, but this is rather because the disease has been followed by some contraction of the hamstring tendons and some crippling of the gastrocnemii and solei muscles, than because he has any need of such support to steady himself.

This case seems to me to have an important bearing upon the physiological question as to the existence of a true muscular sense. In comparing the condition of this man with that of patients suffering from locomotor ataxia due to sclerosis of the posterior columns of the spinal cord, in which disease we usually have more or less complete anæsthesia of the soles of the feet, it is well known that want of co-ordination of muscular motion

is one of the most characteristic symptoms, and that such patients are entirely unable to stand alone or to walk alone with their eyes closed or in the dark. The question has been raised in connection with this disease—progressive locomotor ataxia—whether this want of co-ordination is due to the abolition of an additional special sense, a true muscular sense from which we derive a clear knowledge and perception of the state and force of muscular contractions, or whether it is simply due to an interruption in the regular transmission to the sentient centres of the sensory impressions from the skin. Authorities are much divided on this subject, and many able clinical writers upon this disease incline to the view that it is simply due to a disturbance of the common sensibility of the skin.

In ordinary walking, as is well known, we make use of certain co-ordinated movements which have become habitual to us, and which are employed so as to secure a steady gait, almost or entirely without any conscious or voluntary effort. In these movements, however, no matter how automatic they may have become through long habit, there unquestionably is some assurance conveyed to the nervous centres, though it is not distinctly appreciated, as to the relative state of contraction of the muscles in action, and as to the position of the limbs.

This impression is, as before said, derived either from the ordinary tactile sensations of the cutaneous surface of the legs and feet, and of the deeper tissues or the articular surfaces, or from a special muscular sense which informs us as to the state and force of the contraction of the various muscles. In addition to this impression, moreover, we may derive important aid, in walking, from our eyes, which may be used to watch the movements of our limbs, and guide and direct them in relation to the ground and surrounding objects. When, therefore, there is any disturbance in the power of co-ordinating muscular movements we find that vision is relied upon as a guide in walking. Thus patients with locomotor ataxia are compelled to keep their eyes constantly fixed upon their feet and on surrounding objects, and, if this additional source of equilibrium is withdrawn, by closing their eyes or placing them in a dark place, they fall to the ground unless supported.

In many cases of locomotor ataxia, so called, we find that this is the case even when the sensation in the soles of the feet is by no means completely destroyed. I have seen many cases, and have now several under my care, where the degree of anæsthesia is not very intense, where pin-pricks in the soles of the feet are distinctly felt, where the patient can readily tell the difference between cold and warm water when applied to the feet, where they are able to tell the difference between treading on a soft carpet and treading on a wooden floor, yet the patients are entirely unable to walk so soon as their eyes are closed.

If then the ataxia, or loss of muscular co-ordination, depended upon the cutaneous anæsthesia, and was due to the impairment, or retardation, or irregularity of the transmission of the tactile impressions from the limbs, it would appear probable that in cases of complete anæsthesia of the legs and feet, there should be even greater inco-ordination, and consequent inability to walk, without support, in the dark or with the eyes closed.

In this point of view the case which has just been referred to seems to have an important bearing on the question. In this case we have no disturbance whatever of muscular power, but complete annihilation of cutaneous sensibility, and yet we find that this withdrawal of all the tactile

impressions, conveyed from the soles of the feet, and from the surface of the legs, is not followed by the slightest impairment in the power of muscular co-ordination, but that the patient is able to walk perfectly well without any extraneous aid from his eyes, or from support given to him by others, or without the use of a cane. Upon what, then, must he depend for the knowledge of the regular co-ordinated movements of his legs? We have withdrawn, it seems to me, almost every element in the question, except the single one of the existence of some internal state of consciousness of the contractions of the muscles of the legs. It appears to me that this case is the strongest pathological argument which has yet been advanced in support of the view that there exists a special muscular sense, and, indeed, it seems difficult to conceive of any other explanation which would account for the condition present.

Postscript, April 19, 1871.—Since the above report was presented to the College, a marked change in the patient's condition has occurred, so that I am enabled to complete at this time the record of his case.

On December 2, 1870, a small blister was applied to right leg just below the upper limit of the anæsthetic area. This blister drew severely, and, so soon as the skin had healed, was followed by a second and larger one. This blistering was kept up from December 2, to February 25, during which time eight or ten blisters were applied over various parts of the leg from the knee to the ankle. Their sizes varied from 2x4 to 4x6; they were left on for about twelve hours each, and in all cases blistered severely. No sensation was felt while any of them were drawing, until on February 25 the largest blister of all, 6x6, was applied over the antero-lateral aspect of the right leg, just below the knee. There had been two blisters previously over this same spot. This one acted powerfully, a large bulla being formed; the blistered surface was intensely inflamed, the redness extending down the limb, so that the whole leg presented an erysipelatous appearance. After the blister had drawn fully, the patient noticed that there was a slight return of sensibility over the blistered surface. Two days following, and apparently in consequence of the constitutional irritation caused by this severe blister, he had a chill, followed by high fever, flushing of the face, anorexia, languor, and debility. The third day, profuse and persistent sweating occurred over the entire surface, including the legs and feet; and he observed a rapid return of tactile sensibility over both legs, so that in the course of twenty-four hours it was restored to its normal degree. The sweating continued profuse for four days, at the end of which time the legs were much softer, the skin especially feeling much more soft and supple. The discoloration of the legs was much diminished. Tactile sensibility of legs and feet perfectly restored, the lightest touches being now perceived; the appreciation of painful impressions as well as of heat and cold was also normal. Tickling the soles of the feet caused marked reflex contractions. The blistered surface was still raw, granulating, and bled freely on slightest touch. When examined a few days ago, April 14, the following note was taken of his condition. The left leg has regained its natural colour and softness, the left foot is still somewhat hard, and when handled imparts feeling of being "hide-bound." Its sensibility is, however, perfect, the colour of the skin good, and considerable mobility of the toes has returned. The right leg is still much discoloured from the repeated blistering, but tactile sensibility is perfect over its surface, and it is much softer than formerly. There was at first but little improvement in his gait, as he suffered from stiffness and pain in the right ankle-joint,

which interfered materially with walking. These are now subsiding under the use of small blisters to the joint, and his gait is rapidly improving.

The recovery in this case was most unexpectedly rapid. The repeated application of blisters to the leg was directed with the view of stimulating the circulation in the derm and subcutaneous tissue, and thus inducing the absorption of the partially organized lymph with which these tissues were infiltrated. I regarded the case as one of sclerosis of the skin in which the proliferation of lymphoid cells had actively advanced, inducing such pressure on the cutaneous nerves as to produce entire anæsthesia of the affected surfaces. The condition of the parts further showed that the stage of contraction due to the gradual development of the newly formed lymphoid elements into fibroid tissue was progressing. The only rational plan of treatment, therefore, appeared to be, to endeavour to powerfully influence and modify the local circulation and nutrition of the parts. It is remarkable, however, that the action of all the former blisters failed to produce any appreciable result, until a very large and severe blister caused a high degree of sympathetic irritation, with fever which was followed by most profuse and long-continued critical sweating. Simultaneously with this violent perturbation of the cutaneous circulation, absorption of the lymphoid material formed in the derm and subcutaneous tissue began, and was attended with the rapid softening of the tissues and liberation of the sensitive nerve-filaments.

The question of the possibility of this patient being a malingerer was carefully considered, and he was critically watched and tested, with the invariable result of confirming the complete anæsthesia of his legs.

April 5. Pyæmia following Pelvic Cellulitis.—Dr. JAMES H. HUTCHINSON read the following case illustrative of the similarity of rheumatoid arthritis, gonorrhœal rheumatism, and pyæmia:—

Last year I reported¹ to the College a case of pyæmia, simulating acute articular rheumatism, a manifestation of an altered condition of the blood, which I believe to be more common than is generally supposed. This evening I propose to read the history of a case of disease to which I find it difficult to give a name; presenting as it does many points of resemblance to pyæmia, it nevertheless differs from that disease in its duration, and in the less intensity of many of its prominent symptoms.

The following abstract of the case is derived from notes taken at the bedside: M. D—, æt. 20; admitted July 8, 1870; Irish; single. Has been two years in America, during most of the time living as child-nurse in West Philadelphia. Her health has always been good, and she has menstruated regularly from the age of fifteen up to February, 1870, when in consequence of exposure to cold and wet the menses were arrested in the middle of a period. This was followed by swelling of the hands and feet, by vomiting occurring generally early in the morning, and by chills, giving place in the afternoon to fever, and in the evening to profuse sweating. In addition to these symptoms there were more or less loss of appetite, constipation, distension of the abdomen, and profuse leucorrhœa constantly present. About four weeks before admission her ankles and legs became very much swollen, a condition which was relieved by bandaging. On several of her fingers are the scars of indolent sores. On admission she complained of pain in her back and right groin and thigh, but was not

¹ American Journal of the Medical Sciences, April, 1870, page 398.

confined to her bed. The vomiting had ceased, but constipation and profuse sweats still persisted. She was ordered the syrup of the iodide of iron.

A digital examination showed that the uterus is but slightly movable, that it is jammed down into the excavation of the pelvis, and that there is ante flexion and a detrusion of the whole organ to the left of the median line. The pelvic tissues are thickened, especially on the right and in front, evidently as a result of old pelvic cellulitis.

While she was under the care of my colleague, Dr. John F. Meigs, several collections of pus formed in various parts of her body, as, for example, over the left hip, over the right knee, and over the left scapula; these are said to have been preceded by pain and redness, and when opened to have given exit to a creamy pus. After being evacuated, air was excluded from the cavity, and pressure made over it. She is also said to have had at various times swelling of the larger and some of the smaller joints, not terminating in suppuration. Chills followed by profuse sweating were of almost daily occurrence, and were apparently beyond the power of remedies to prevent. At one time the leucorrhœal discharge was slightly tinged with blood, but menstruation has never taken place since the beginning of her sickness. On the eighth of November the patient passed into my care, and has had since that date several of these so-called abscesses, one over the left scapula, one in the palm of the right hand, and two over back of right wrist. These upon being freely opened gave exit to pus which was not at all creamy, but thin and of poor quality, being ichorous rather than laudable in its character. Instead of closing the abscesses and making compression over them upon the evacuation of their contents, they have been allowed to heal gradually from the bottom. The formation of these collections has not been preceded by pain and redness, but, on the contrary, they would have in most instances escaped notice, were it not for the elevation of the surface which they produce. There has been at various times since she has been under my observation, enlargement of the large joints, evidently from effusion into them, and there is at the present time enlargement from the same cause of the second joints of all the fingers of the left hand and of the middle and ring finger of the right hand; in no case, however, has suppuration occurred, and there is no evidence of disorganization of any of the joints except that of the middle finger of the left hand. On examination a good deal of tenderness still exists in the right iliac region, and in addition to this a sense of fulness is imparted to the hand, but I cannot discover either through the abdominal walls or by the vagina any indication of the presence of a collection of pus in the vicinity of the uterus. It is true, that there is a discharge from the vagina, but this does not differ in any physical characteristic from ordinary leucorrhœa, and there is no reason to believe that it originated in or is kept up by the inflammation of the cellular tissue surrounding the uterus.

In the treatment of the case I have had recourse to antiperiodic doses of quinia; but these, while they have seemed to me to diminish the severity and perhaps the frequency of the chills, have been without further influence on the course of the disease. Having satisfied myself that no great improvement could follow the administration of mere tonic remedies, I determined to give her a medicine possessing antiseptic properties. The sulphites suggested themselves to me, but the large dose in which these must be given to produce their effects seemed ill suited to a case in which gastric irritability has been a more or less constant symptom. Car-

bolic acid possesses antiseptic properties even when administered in small quantity, and it therefore seemed to be indicated in this case. Commencing with a single drop, the dose was gradually increased to four and a half drops three times daily, which was perfectly well borne by the stomach. This remedy was continued until I found I could procure the sulpho-carbolate of soda, which has the advantage over the plain carbolic acid of being much less nauseous and irritating. In doses of five grains four times daily, however, it produced sickness, and I was obliged to return to the use of the acid, which was soon after abandoned for the same reason. Notwithstanding this ill effect of the antiseptics employed, much improvement in her general condition has followed their administration, for while she was taking them—a period of over six weeks—the chills, which had previously been of almost daily occurrence, became much less frequent, the intervals between them being sometimes over two weeks. Only two abscesses have formed since she was placed on their use, and the general appearance of the patient indicates a very much improved condition of health.

It will scarcely be doubted that the case I have reported is one of blood poisoning, undoubtedly depending upon the absorption of some of the products of the inflammation, which probably originally involved the cellular tissue surrounding the uterus, but in the existing condition of knowledge, it is impossible to state the exact nature of the change in the composition of the blood. It has been asserted by some authors that these purulent collections are always preceded by the obliteration of the nutrient artery supplying the part in which they occur. But the occurrence of clots in the arteries in a case like the one we have been considering, in which there is no disease of the heart or arteries, is as difficult of explanation as the formation of purulent collections themselves, and the writers above alluded to have not advanced our knowledge of the true pathology of this and similar cases.

The case has appeared to me to be of interest and also of value, not only because it forms a link in the chain which seems to connect pyæmia with rheumatoid arthritis, and with gonorrhœal rheumatism, and to point out these three as allied affections, allied, it is true, in a way we cannot yet understand, but still bearing the unmistakable evidences of relationship one to another; but, also, because Mr. Matthews Duncan in his recent work on Peri- and Parametritis does not mention purulent absorption among the probable or even possible complications of these diseases. Internal suppurations are now known to give rise frequently to pyæmia, and the fact that such a complication has not been recorded cannot be urged as a reason for rejecting the diagnosis in this case, more especially as the pathology of peri- and parametritis is still in an unsettled condition, and our knowledge of their clinical history can be said to have only just begun.

April 19. Extroversion of the Urinary Bladder.

Dr. F. F. MAURY exhibited to the Fellows of the College two boys, aged respectively eight and nine years, both of whom had been successfully operated upon by him for extroversion of the bladder.

Prior to the operation there was, as usual in such cases, a deficiency of the lower and anterior part of the abdominal wall; so that the mucous surface of the posterior wall of the bladder was exposed and on a level with the surrounding skin. The lower portion of the bladder was par-

tially concealed by the penis, which was short, inclined upwards, and flat upon its upper surface, where it presented a slight median longitudinal groove. The mucous membrane of the bladder was continued along the upper surface of the penis to the glans penis, which was flatter than usual.

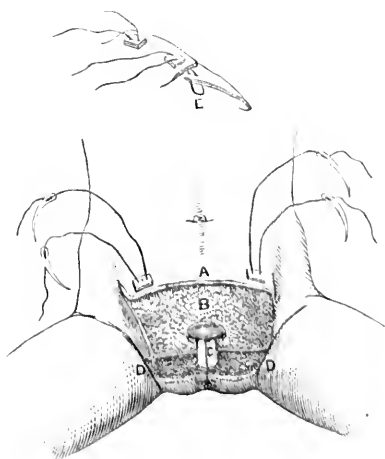
Owing to the usual deficiency of the pubic symphysis in these cases, there was a double scrotal hernia; and on either side in the bottom of the hernial sac could be felt a testicle.

Before the operation the condition of these little sufferers was most melancholy. They could find no rest, neither day nor night, until complete exhaustion granted them a temporary respite. The urine constantly spread itself from the surface of the bladder over the surrounding skin, thereby scalding it and causing constant inflammation. The bladder and penis were incrustated with urinary salts. Every motion of the bowels or the slightest collection of flatus in the portions of bowel contained in the hernial sacs, gave violent pain. One little fellow could procure sleep only on his hands and knees; and the other on his back with the legs and thighs strongly flexed.

Such was their condition when I saw them a year ago, a burden to themselves and a source of constant worryment and distress to their parents and friends.

I did not expect to obtain in either case as good a result as I have the pleasure of showing you to-night; in fact I was much worried lest further deformity or loss of life might follow surgical interference, especially so since surgeons of more years and experience than myself had declined to interfere in the first case upon which I operated.

The operation has the merit of originality, and in brief the following were the steps of my procedure. The object was to cover in the bladder as much as possible, and at the same time to so fashion the flap as to direct downwards and in one direction the flow of urine. With this object in view I commenced a curvilinear incision upon the outer third of Poupart's ligament, and brought it down below the herniæ and scrotum to the middle of the perineum, and thence along the opposite side to a point corresponding to the commencement of my incision. I then carefully dissected this flap up, completely denuding the herniæ of their cutaneous covering. When I had dissected to the root of the penis, I made a valve-like incision in the flap so as to allow the penis to slip through. In this way I obtained one flap that was amply sufficient to cover in the bladder. Then I made an incision transversely across the abdominal walls and dissected up a trap-door flap. I then inverted the lower flap, so as to bring its cutaneous surface in contact with the mucous wall of the bladder. I then bevelled the edges of the lower flap, and by means of the tongue and groove suture of Prof. Pancoast,



A. Trap-door flap above bladder; B. Inverted flap from below; C. Penis and scrotum passing through hole cut in inverted flap; D. Curvilinear incision; E. Form of suture used.

brought it under the trap-door flap and there firmly fastened it. The above diagram gives a view of the suture employed and the mechanism of the operation.

Owing to the giving away of part of the flap in the boy first operated upon, I was twice obliged to review certain parts of the operation. The second boy needed no surgical interference after the primary operation. The parts were dressed with the oxide of zinc ointment softened down with glycerine to the consistency of thick cream. As a result of these operations the boys are here to bear witness that they sleep well, eat well, have no pain, are more comfortable in body and mind, and are immeasurably relieved; and although there is no sphincter action here by which the contents of the bladder can be retained, yet during the recumbent posture the bladder will hold a fair quantity of water without annoyance to the patient. Again, the condition of the parts will permit the wearing of a urinal, which collects the water without difficulty as it flows from the bladder; and the cicatrization of the flaps has cured the herniæ; the testicles being within the abdominal cavity.

I think therefore I may claim these as among the most successful of the operations performed for the relief of this distressing deformity.

In conclusion, I must express my indebtedness to my friend Dr. R. M. Townsend, who has so accurately drawn the diagram illustrating this operation.

Successful Case of Ovariectomy.—By WALTER F. ATLEE, M.D.

The patient, an unmarried woman, 19 years of age, from Trenton, N. J., first came to my notice in May, 1870. Twelve months before that time, she began to enlarge on the right side of the abdomen, and to suffer pain in that situation. She always menstruated regularly. When I first saw her, she was tapped, and the sac, which was monolocular, was entirely emptied, 18 pints of albuminous fluid being removed. She returned to this city in March, 1871, and at that time her abdomen was about as large as it was before the tapping. She was still menstruating regularly. She was admitted to the St. Joseph's Hospital for treatment.

On the second day after her return, a dose of oil was administered to her, and by this means her intestines were well emptied. After this she was only permitted to suck pieces of ice, all kinds of food being forbidden. In the evening 20 drops of elixir of opium were given to her, and the same dose was repeated the next morning, when the operation was performed. The patient was placed under the influence of chloroform; an incision about three inches long was made over the tumour, and the cyst was emptied with a trocar. When sufficiently diminished in size, the cyst was pulled out of the abdominal cavity, and its pedicle tightly fastened in the clamp described by Dr. Washington L. Atlee in the April number of this Journal. The pedicle was then divided, and hare-lip sutures used to close the opening in the walls of the abdomen. The pins were not passed through the peritoneum.

The first forty-eight hours the patient was entirely restricted to the use of ice, then some farina was given to her, and gradually she was allowed to take her ordinary food. The clamp was removed on the 8th of March, four days after the operation, the pins of the sutures on the 9th; on the 11th the patient was allowed to pass water without the use of a catheter; on the 15th an evacuation occurred without the assistance of a cathartic,

and on the 25th, three weeks from the date of the operation, the patient returned to her home.

It is worthy of note that this case was successfully performed in a hospital. It is, at times, exceedingly difficult to have a patient from a distance well cared for in a hotel or boarding-house, or in the house of the kindest relative or friend. Hospitals, where every attention can be had, are objected to in cases requiring severe operations on account of hospital air. It is not believed, however, that such an air necessarily exists in these institutions.

Operation for Supposed Ovarian Tumour; Removal of Enlarged Uterus.—By WALTER F. ATLEE, M.D.

The patient was a married woman, about 52 years of age. Six years ago, just after the battle of the Wilderness, and while menstruating, she received a letter announcing the death of a son. The menstrual discharge ceased at once, and ever since then she had pain on the right side of the pelvis, and eventually became aware of the existence there of a tumour, which gradually increased in size. At the time of the operation this tumour was nearly as large, apparently, when felt through the abdominal walls, as the head of an adult. It was situated rather to the right of the linea alba, and to the touch felt like a cyst, with thick and tightly stretched walls. The neck of the womb was normal in size and position. The uterine probe could not be introduced quite as far as usual into the cavity of the womb. The tumour was felt to be quite firmly attached at its lower part. When the hand was placed over it, and it was tried to move it from side to side, these movements were not felt to be communicated to the uterine neck.

With the belief that this tumour was a cystic one of the right ovary, on the 18th of April the abdomen was opened, most of the adhesions were broken up, and a trocar was introduced into it. No liquid could be extracted. The incision was then enlarged, all the adhesions were destroyed by tearing them with the fingers, and the whole mass, which was found to be a growth from the uterus, was turned out. The clamp was applied around the upper part of the vaginal canal, and the tumour was cut off.

The specimen is here presented. It weighs five pounds. I have examined it only in order to see if the probe would pass into the uterine cavity further than it does into the healthy womb, and it does not. I should be glad to have a thorough examination of it, and the result of the examination reported to the College, for the specimen is certainly a very uncommon one.

The patient operated upon so far is doing well. At the meeting, on the 3d of May, Dr. Atlee made the following statement:—

The pulse the next day was 88, and there was no vomiting.

22d. Allowed gruel; before that only pieces of ice; changed her bandage.

23d. Removed clamp and sutures, and placed over the front of the abdomen several strips of adhesive plaster; a boiled egg was allowed to-day.

24th. A mutton chop was allowed.

25th. A full meat diet.

26th. She was allowed to pass water herself, and an injection was given to move the bowels.

28th. Allowed to sit up.

May 2. With the exception of the bare surface of pedicle, she is very well. She has gone from private room to the public ward, from the basement to third story, about eighty feet higher, up the stairway herself, without fatigue.

The specimen was referred to a committee, consisting of Drs. Wm. Pepper, Wm. F. Norris, and John Ashhurst, Jr., which reported as follows :—

The mass was somewhat triangular in shape, with the angles very much rounded. Its circumference transversely around the upper and widest part was 20 inches. The circumference, measured around its vertical diameter, was about 15 inches. The exterior was glistening and fibrous in appearance; on palpation it gave the sensation of a tensely-filled sac. No openings for the entrance of the Fallopian tubes were visible to ordinary ocular inspection.

A small piece of the vagina was found with about one-fourth of the os uteri, the remainder having been severed and left in the grasp of the clamp. The os was reduced to a mere ridge on the mucous membrane of the vagina, the neck being entirely obliterated. No cervical or uterine cavity could be found, the entire lumen being occupied by a mass which presented an irregularly rounded portion entirely filling the distended os.

On section, the tumour was found to be solid throughout, and to consist of a mass which sprang from almost the entire extent of the inner layer of muscular tissue of the uterine wall, and, growing concentrically, had produced entire obliteration of the cavity, and at the same time great and symmetrical enlargement of the uterine mass.

The tumour, in places, strikingly resembled muscular tissue; in other places it was softer and more succulent; two small pseudo-cystic cavities were found, due to softening of its tissue. Microscopic examination showed it to be a *myoma*, consisting of elements homologous with the tissue of the uterus, namely, spindle-shaped cells, imperfectly developed muscular fibre cells, and some curly elastic fibres. The mass was invested by the thickened peritoneal capsule, and by the external layer of muscular tissue of the uterine walls: it could be readily stripped away from these.

It will, therefore, be seen that the tumour is an ordinary uterine myoma, which, by its most unusual mode of growth, has completely obliterated the uterine cavity, and obstructed the cervical canal. The morbid appearances of the tumour fully justify the statement of Dr. Atlee as to the impossibility of introducing a sound to a greater depth than normal.

REVIEWS.

ART. XIX.—*On Amputation of the Cervix Uteri in Certain Forms of Procidentia, and on Complete Eversion of the Cervix Uteri.* By ISAAC E. TAYLOR, M.D., President and Emeritus Professor of Obstetrics, and Diseases of Women and Children, in the Bellevue Hospital Medical College; Vice-President of the New York Academy of Medicine, etc. etc. 4to. pp. 69. New York: D. Appleton & Co., 1869.

Études Anatomiques et Anatomopathologiques sur la Statique de l'Utérus. Par le Docteur F. A. ARAN, Médecin de l'Hôpital Saint-Antoine, Professeur Agrégé à la Faculté de Médecine de Paris. Archiv. Gén. de Méd., 5ème Série, Vol. II., 1858, page 139 et page 310.

Anatomical and Pathological Researches on the Statical Properties of the Uterus. By F. A. ARAN, M.D., Physician to the Hospital "Saint Antoine," Assistant Professor in the Paris School of Medicine, Archiv. Gén. de Méd., 5th Series, Vol. II., 1858.

De la Chute de l'Utérus. Par le Docteur E. Q. LE GENDRE, Ancien Prosecteur de l'Ecole Anatomique des Hôpitaux; Lauréat de l'Institute, etc. etc. pp. 170. Paris: Baillière et fils, 1860.

On Prolapsus Uteri. By E. Q. LE GENDRE, M.D., late Prosector in the Anatomical School of the Paris Hospitals, Laureate of the Institute, etc. etc. pp. 170. Paris: Baillière et fils, 1860.

THERE are few subjects upon which the attention of the profession has been more worthily bestowed than upon the treatment of prolapsus uteri. We believe, however, that there are few subjects less generally understood, even by gynæcologists, than the anatomical and physiological data which serve to explain the mechanism and pathology of this complaint. Though Aran's articles and Le Gendre's monograph appeared more than ten years ago, yet their relations to procidentia uteri, together with the generally imperfect acquaintance with them by authors, will, we hope, justify a notice of these two publications in connection with that of Dr. Taylor.

This gentleman has published a monograph of sixty-nine pages, which first appeared in the *Charity Hospital Reports*, and in which are recorded the results of an extensive practical experience. He has called to his aid, in support of peculiar views, valuable testimony furnished by the pathological anatomy of uterine prolapsus, and he has extensively availed himself of the anatomical and physiological knowledge which the carefully conducted experiments of Le Gendre and others have supplied. Dr. Taylor recognizes, with most writers, three degrees of uterine prolapsus, comprising, 1st, slight descent of the uterus in the pelvic cavity; 2d, a further descent in which the os tincæ appears at the vulva; and, 3d, a complete protrusion of the uterus externally, called procidentia, which last condition is especially the subject of his remarks. He quotes from the remarkable memoir of Huguier (*Les Allongements Hypertrophiques*

du Col de l'Utérus) which appeared about ten years ago, and which so influenced the opinions of surgeons with regard to prolapsus, and procidentia uteri, as to place these subjects in an entirely new light. Huguier maintained that the ordinarily received opinion concerning procidentia uteri was erroneous; and he denied that the appearance of the os uteri at the vulva, or that a greater or less protrusion of the uterus outside of the vulva, was the result of a complete downward displacement of the uterus. He affirmed that the body of the womb remained in the pelvic cavity in its normal position, and that the apparent prolapsus was due to a hypertrophic elongation of the supra-vaginal portion of the cervix. Huguier adduced in support of his opinions the measurement of the uterine cavity with the probe, and other means of physical exploration. It is evident that Huguier described as a usual occurrence, an exceptional pathological condition, and that he was quite in error when he supposed that the body of the uterus is rarely, if ever, procident. We have seen a number of cases of complete procidentia uteri, in which a careful examination with the probe, and otherwise, plainly proved the uterus to be entirely external to the body. An elongation of the neck of the uterus usually characterized these cases, and this elongation was due to the extreme ductility of the tissues which compose this part of the womb. Taylor shows that during the last century, Levret described the condition of the uterus supposed to have been first pointed out by Huguier, and states that this author introduced a whalebone stylet to ascertain the exact depth of the uterus, and that he expressed the opinion, that none of the old obstetrical authors knew of those cases in which the neck of the uterus is lengthened to the extent of five or six inches, or more, while the fundus uteri retains its normal position in the pelvis. West, Virchow, Mayer of Berlin, Cloquet, Heming, and numerous other authors refer to this same condition, and Dr. Taylor makes an important quotation from Cruveilhier's pathological anatomy, to the effect that this anatomist invariably observed in prolapsus of the womb an elongation of this organ, with great narrowing at the junction of the body with the cervix. We recollect that the late Sir James Y. Simpson has stated in one of his essays, published about the year 1849 or 1850, that the uterus may show a lengthening in congestive or inflammatory hypertrophy, and that the sound may measure three and a quarter inches. Examples of the same kind have fallen under our own observation. But some remarks, made long ago by Simpson, and which are more pertinent to the subject of elongation of the cervical portion of the uterus, show that he knew that longitudinal hypertrophy in the unimpregnated uterus nearly always results from elongation of the cervix. He observes that the part of the uterus known as the isthmus appears to be ductile, and capable of extension to a greater or less degree. He not only noticed this elongation of the intermediate portion of the uterus in prolapsus, but also in cases in which the cervix was fixed by adhesions, the result of inflammation, and the fundus drawn upward during an increase in the development of the body of the organ.

To return to our notice of Dr. Taylor's monograph; he judiciously alludes to the difference of the anatomical structures of the cervix and body of the uterus, and to the different physiological functions of these two parts, in their relation to prolapsus. Huguier asserted that longitudinal hypertrophy occurs only in the supra-vaginal portion of the cervix: The coincidence of hypertrophic elongation of the infra-vaginal

portion with that of the supra-vaginal, has been attested by Verneuil, and in two cases by Dr. Taylor. In describing the causes of procidentia uteri, he attaches a proper importance to the influence of sub-involution of the peri-uterine tissues. He shows that, after labour, when the uterus does not undergo the proper degree of involution, but remains large and weighty, the physiological softening not only invades the uterus, but extends to the ligaments, the pelvic fascia, and especially to the dartoid structure of the parts contiguous to the uterus. He remarks, that it is well known that when the fibrous tissues have once been stretched, and have lost their elasticity, they seldom recover their former power of sustaining the uterus. They remain relaxed, or may be lacerated; this is especially true of the lumbo-sacral ligaments. The rupture of these ligaments, he says, is considered by Boivin and Dugés as playing an important role in the mechanism of procidentia uteri. Dr. Taylor recognizes pregnancy as the most frequent cause, as undoubtedly it is, which leads to the production of this complaint. We sent to him, for treatment, a case of procidentia uteri, in which there was complete eversion of the cervix. The prolapsed parts formed an enormous tumour, which measured nineteen inches in circumference, and seven in length. The prolapsus had existed for six years.

We prefer to abstain from noticing at length much of Dr. Taylor's paper, that is to us extremely interesting and instructive, and propose particularly to point out in what consists his treatment of procidentia uteri, as probably of more immediate interest to our readers. We shall follow this notice by a careful notice of Aran's publication on the statical properties of the uterus, and of Le Gendre's excellent and suggestive monograph on uterine prolapsus. It would be proper, however, at this time, to state that Dr. Taylor, in alluding to the non-involved or congested uterus, makes an important, and we believe a correct observation, which is, that the weight of the uterus, by its own gravity, brings about a certain form of lengthening of its supra-vaginal portion. His views with regard to what he calls eversion of the cervix, and his opinions concerning inversion of the uterus, are peculiar and well worthy of attention. In fact we have had repeated ocular demonstration of the pathological state which he describes, and we have, from the interesting cases seen, been induced to adopt a different opinion about the mechanism of inversion of the uterus from that generally entertained by gynecological writers. We are convinced in fact that the rolling inside out or eversion of the cervix does actually occur, and that it is probably sometimes the first degree of inversion of the uterus. Our author says, that the mechanism of eversion of the cervix is simple, and presents no difficulty of explanation. In several instances after the eversion was reduced and the uterus returned into the vagina, if the speculum was introduced and withdrawn, the eversion could be seen gradually to recur, as the uterus again prolapsed along the vagina, during the withdrawal of the instrument. It will, he says, in speaking of the everted cervix, become completely everted after the uterus is procident. It (the internal surface of the cervical cavity) is, he remarks, rolled out in the same manner that the horse's anus is after defecation, just before the closure of the anus. We think this a very apt illustration. In the human subject we know that the eversion of the anus takes place as the first degree of prolapsus of the rectum. Quite recently we reduced a large prolapsus of the rectum, which was strangulated at its base, and which reminded us forcibly of

this illustration. The reduction of the prolapsed tumour was effected, not by attempting to replace it, as we would a hernial tumour, by first pressing on the part at its base, but by rolling inward the prolapsed walls of the rectum, through the narrow and puckered orifice at the centre of the prolapsed mass of the gut. Dr. Taylor believes that it is necessary to know the exact nature of the pathological conditions which give rise to procidentia uteri, in order to adopt a correct and rational treatment for this disease.

He says that there may, in some rare cases, be simple prolapsus without hypertrophy, and without any lengthening of the uterus; or there may be prolapsus with more or less elongation of the supra-vaginal portion of the cervix, with or without hypertrophy. The increase in length is most generally in that part of the uterus known as the isthmus. Dr. Taylor's monograph is, it seems, intended to be principally devoted to the consideration of the radical cure of procidentia uteri. He notices somewhat elaborately, and in a critical manner, the different operations which have been, and are still practiced for the relief of this disease. We shall not detain the reader with a review of the different modes of treatment adopted by others. We may possibly, however, at some other time, consider the relative merits of these different modes of treatment; but, for the present, we desire to confine our remarks, so far as regards the surgical treatment of procidentia uteri, principally to Taylor's operations for the relief of this affection. For the radical cure of procidentia uteri, or for the alleviation of this disease, in the amputation of the cervix he is guided, he remarks, by the nature of the case which requires treatment. His operations are essentially procedures which have for their object a removal of more or less of the cervix uteri.

The operations of episioraphy or episio-perineoraphy, though performed in a manner peculiar to this surgeon, are accessory and subsequent stages of his management of procidentia, and are not, in all cases, required.

As a contribution to uterine surgery, it is undeniable that Dr. Taylor's treatment of procidentia uteri is exceedingly important; and he should be highly commended for the labour and talent which he has devoted to this subject. In the addendum to his paper he reports 84 cases, of which 34 were followed by favourable results. He states that some of these 34 cases were retained in the Bellevue and Charity Hospitals for several months, and were seen by those interested in their results. The uterus retained a normal position; the os tincæ was two and a half inches from the vulva. Though we would abundantly testify our appreciation of the result which we have seen follow Dr. Taylor's operations on the cervix for procidentia, we must acknowledge that our first impressions of his subsequent operation on the perineum were not altogether favourable. We confess to a preference for a different adjustment of the sutures in the perineal operation to that used by our author. It may be that in the two cases upon which, in this respect, our opinion is based, there were unavoidable circumstances which would have prevented the complete union of the parts after any operation of this kind.

As regards, however, the proper management in general of procidentia uteri, we believe, so far as we are able to discover, that Dr. Taylor's treatment is based on more correct anatomical and physiological data than the treatment usually adopted. Indeed, it is on account of this opinion that

we propose to notice also the publications of Aran, and of Le Gendre, which furnish these interesting data.

When there is considerable hypertrophy of the infra-vaginal portion of the cervix, and it is also elongated, Dr. Taylor resorts to the usual circular amputation of the cervix, and uses for this purpose, sometimes the *écraseur*, at others the knife, but more commonly scissors. He takes the precaution, however, when the *écraseur* is used, to divide the mucous membrane completely around the cervix, so as to prevent a drawing in of this membrane, and injury to the peritoneum.

The mode of amputation of the cervix which particularly attracts our attention is that which he describes at pages 52, 53, and 54. We believe, so far as we know, that this procedure is peculiar to him. It is extremely ingenious, and well merits attention. The manner in which this operation is performed is very simple, and readily understood, though we were not at first fully able to comprehend the description of it. This mode of amputation of the cervix is what Dr. Taylor calls the "double flap operation," and is suited to cases in which there is complete or partial eversion of the cervix. He states—

"That the first step in the operation is to return the body of the uterus into the pelvic cavity, the cervix remaining external; next, to reinvert the cervix uteri; then divide the right and left side of the cervix laterally, half to three-quarters of an inch *above* the union of the vaginal cul-de-sac."

Apprehending that some of our readers may not fully understand what the doctor says about dividing the cervix above the vaginal cul-de-sac, we will state that we understand him to mean that he cuts through the cervix on each side, as high up as the insertion of the vaginal cul-de-sac, and only partially divides the cervix above this insertion, *from within* outward; otherwise, he would cut through into the peritoneal cavity.

When the division of the cervix has been made on each side, the doctor seizes the posterior lip, and, after having transixed it with a bistoury from one side to the other, he bevels off, by incision from the internal surface of this posterior lip or flap, sufficient of the substance of the tissue of the cervix to considerably reduce its thickness. The anterior flap is next treated in the same manner, and each flap doubled upon itself, and secured on each side in this position by a metallic suture. Each of the labia is brought in apposition with its fellow by two more sutures on each side, and an additional one in front to prevent the parts from gaping. The lateral portions of the cervix are in close union at their edges, and the two previously external mucous surfaces of the divided infra-vaginal portion of the cervix are each doubled up and brought in contact.

The artificial os tincæ is covered with a mucous membrane for three-quarters of an inch *within* the cervix, and atresia of the cervix is impossible, as occurs after Sims' amputation of the cervix, in which case the denuded vaginal mucous membrane is used to cover the stump.

In cases of eversion of the cervix, Dr. Taylor resorts occasionally to another method, which is, after the eversion is reduced, to remove on each side a triangular piece of the cervix, and to unite the cut surfaces with sutures. We desire to remark on two cases operated upon by Dr. T. which came under our observation; one was of a woman, Mrs. C., æt. 50, with procidentia uteri of three years' standing, and without any appreciable eversion of the cervix. In this case there was rectocele with cystocele; the latter, as is known, is of constant occurrence in procidentia uteri; the former is very rare. The laxity of connection of the anterior

wall of the rectum with the vagina, except superiorly, where the fibrous attachment of this canal to the rectum is more intimate, explains why the rectum does not usually prolapse with the vagina in procidentia uteri, in the same manner as the bladder, which is so intimately connected with the upper part of the vagina, and the anterior surface of the supra-vaginal portion of the cervix. The prolapsus of the rectum in this case was independent of the procidentia. The uterus was distinctly felt externally, and was *retroflexed*. The operation practiced was simply the removal of a small portion of the cervix for its derivative effect. The prolapsus was reduced, and perineoraphy was performed for the ruptured perineum. Several weeks subsequently to these operations on the cervix and perineum, in the presence of a number of medical gentlemen, we examined the patient, and found that the uterus was quite well maintained in position, and that the distance of the cervix from the vulva, while the patient was standing, measured about $2\frac{1}{2}$ to 3 inches. The uterus, in its replaced position, was found to be anteverted, and to measure with the sound $2\frac{1}{4}$ inches. We regret that we are unable to state what was the measurement of the length of the uterine cavity while the uterus was procident. The second case which we wish to notice was that of a patient who consulted us, and whom we sent to Dr. Taylor for treatment. There was complete eversion of the cervix. The woman had never had children; the prolapsus first came on suddenly about six years ago, after an effort at lifting or some such violent exertion. The tumour had dangled between her legs for a number of years, and was, at the time we saw it, of enormous size. The prolapsus caused the usual distressing symptoms, which were recently much increased with its rapid development. The measurement with the sound from the internal os, or at least from a point much above the external os, was $2\frac{1}{2}$ inches. That which we supposed to be the external os was the point of the everted canal of the cervix to which we allude. The result of the measurement strengthened the error. The reddened, ulcerated, and secreting surface before us was the internal surface of the cervical canal, and the external os formed a narrow constriction around the everted mass in the same manner as the outer margin of the sphincter ani muscle constricts a prolapsed rectum. The case interested us so much in respect to this eversion of the cervix, and on account of the magnitude of the tumour, as well as on account of the history of the case, that we had it photographed before we decided to send the patient to Dr. Taylor for treatment. He removed with scissors from the everted surface of the cervix a slip of tissue on each side, and left the central part of this surface undenuded. He next reduced the eversion, and maintained the parts in apposition with silver sutures, until firm union on each side took place. We have repeatedly seen this patient since. She came under our observation again quite recently, about four months after the operation. The perineal operation was a partial success, indeed there is only a slight bridge of tissue which unites the posterior parts of the vulval orifice. The patient is obese and proportionately of large size. The excessively redundant vaginal walls show a tendency to prolapse while she is standing; but the uterus still remains high in the pelvis while she is in this erect posture. Examined while she was lying down, the cervix was with considerable difficulty reached with the index-finger carried high up behind the inner surface of the pubic bone. The uterus was anteverted. The singular circumstances connected with the great ascent of the uterus in the pelvic cavity, after Dr. Taylor's operation on

the cervix, attracted our attention as the opposite condition of procidentia, and led us to consider with care some of the anatomical peculiarities of the parts concerned in this complaint. It is proper to bear in mind, however, that the vagina and vagino-vesical walls, at least that portion of the bladder which formed a part of the prolapsus, are enormously hypertrophied, especially the fibro-dartoid tissue; and that, after reduction of the prolapsus, time will be required for the involution of this tissue before the very capacious vagina can even partially return to its normal dimensions. Indeed it was easily perceived by the touch that the vaginal walls were greatly hypertrophied. This circumstance has an important bearing upon electrorrhaphic operations, which are designed to lessen the redundancy of vaginal tissue, and to constrict the vagina.

Aran has correctly observed, in speaking of uterine displacements in general, and the same is especially true of prolapsus, that it is necessary to know the antecedents of the patient, the varied modifications of the uterine organs due to sexual intercourse, to pregnancy, or to the cessation of menstruation. These modifications are often important factors in the solution of the problem of uterine prolapsus. This is so complex as to require for its solution a knowledge of the different phases of development of the uterus, and its surrounding parts, from the earliest period of intra-uterine life to old age.

The posterior or utero-sacral ligaments, according to Aran, are the only real ligaments of the uterus. They are composed of elastic fibres, and are subject to hypertrophy, and may acquire the density and resistance of the most compact fibrous sheaths. We believe with him that the description of these ligaments by anatomists is incomplete and defective.

"This ligament in the adult, and there is, properly speaking, only one, takes its origin from the point of junction of the neck and body of the uterus. In the fetus, and before puberty, the utero-sacral ligaments arise from about the middle of the cervix, or a little below it. The reason that these utero-sacral ligaments should be considered as only one ligament, is, that the posterior fibres which in part compose them, and which circumscribe the recto-vaginal space, are continuous, from one side to the other, without any line of separation; the middle fibres intersect on the middle line; and the anterior fibres are inserted in the uterine tissue, and intermix with fibres of the vagina which are also inserted into this tissue. This arrangement is most marked in the virgin, and in those cases in which these ligaments have undergone hypertrophy. The utero-sacral ligaments usually embrace the rectum in their bifurcation posteriorly; but, with rare exceptions, this does not occur. They do not stop immediately opposite the sacrum, but are directed upward, in diverging on each side of the rectum, and terminate in very fine filaments, one above the other, in the subperitoneal cellular tissue, and extend as high up as the two last lumbar vertebrae. The utero-sacral ligaments are only exceptionally inserted into the rectum."

We think that this may explain the infrequency of rectocele in procidentia uteri.

The posterior and external fibrous expansion, which these ligaments form on each side, is applied to the external and posterior part of the pelvic excavation. Their direction, as we have attentively observed them, is from above, downward, then outward, in circumscribing the rectum, and finally upward and backward.

"When the uterus is raised by the fundus, and is drawn upward and forward, the utero-sacral ligaments become prominent under the peritoneum. When the uterus is drawn from above downward, by traction on the cervix, these ligaments

are not stretched at first, but so soon as the curve formed by their anterior part is straitened they resist powerfully. If, with the finger in the vagina, the cervix is pushed backward, and the fundus, with the unemployed hand on the abdomen, is brought forward and downward, the utero-sacral ligaments become relaxed. If the cervix is pulled strongly in front, or the fundus pushed violently backward, these ligaments are stretched, and on the cadaver are seen to be prominent under the peritoneum."

Savage has given some excellent illustrations of these induced conditions of the utero-sacral ligaments in the handsomely executed drawings of his work.

"The utero-sacral ligaments oppose, to a great extent, the descent of the uterus, if, as often occurs after pregnancy, they have not become considerably atrophied. They maintain the neck of the uterus at the posterior part of the pelvic cavity."

During advanced pregnancy, according to Aran, the utero-sacral ligaments become useless so far as to prevent descent of the uterus; and it is at this period that atrophy of these ligaments occurs. So that, after pregnancy, they do not oppose so effectually a tendency to falling of the womb as before.

"If," says Aran, "the uterine, as sometimes happens, should be fastened by adhesion by one of its borders, and be immovably fixed in this position, the utero-sacral ligament of that side disappears by atrophy of its tissue. If the uterus is inclined to one side, the ligament which corresponds to the lateral version becomes lengthened, and the other shortened."

It is known that Henry Bennett considers the vagina as the principal means of uterine support. Stoltz, according to Aran, in experimenting on the cadaver, cut out the vagina, without causing the least change in the situation of the uterus; and Richet maintained that the vagina was of no use to keep the uterus in place. This is evidently an error. The more or less perfect manner in which vaginal walls are approximated influences the descent of the uterus; because dilatation of the vagina exercises indirectly a downward traction on the uterus. It will be readily understood, that all pessaries which act by dilatation of this canal act in eventually increasing the prolapsus, and should take their *point d'appui* in such a manner as not to distend the vagina. Electrorrhaphic operations in constricting the vagina may possibly give support to the uterus sufficiently long to permit of at least a partial involution of the hypertrophied vaginal walls, which are the consequence of procidentia uteri. The intimate union of the cervix to the bladder is an important means of suspension of the uterus. Aran tells us that the

"Adhesion of the cervix to the uterus in the *foetus* and in very young subjects is not firm. At this age the utero-sacral ligaments, he remarks, are largely developed, and suspend the uterus in the pelvic cavity. Later in life, the intimate and extensive adherence of the bladder to the uterus causes, by the distension of the bladder, an upward and backward movement of the cervix. At the point where the bladder is attached to the cervix, there also is to be found the attachment of the vagina to the cervix. In fact, the dartoid fibres of the vagina are disseminated in the uterine tissue at this point. As has been already stated, at nearly the same level posteriorly the dartoid fibres of the vagina mingle their insertions with those of the utero-sacral ligaments, and are continued into the uterine tissue of the posterior part of the cervix. There is this exception, however, that the attachment of these fibres to the bladder is very intimate, while that to the rectum is very slight. This part, where the bladder, vagina, and utero-sacral ligaments seem to encircle the cervix, corresponds in the nubile female to the point of union of the neck with the body of the uterus, and is called the 'axis of suspension of the uterus.'"

It is, according to him, around this axis that the movements of the uterus take place. It was generally supposed that the axis of the uterus, which should not be mistaken for Aran's "axis of suspension," was that of the superior strait of the pelvis. Cruveilhier maintained that this position was normal in multiparous women; Boullard, Vernelil, and Follin, several years ago, astonished the profession by statements to the effect that antelexion was a normal condition.

Boullard showed that, in the fœtus and new-born child, the neck and body of the uterus have not the same direction, but that the body was flexed anteriorly on the neck. This is normal at this age. Aran has repeatedly confirmed this rule, and at this early period, as later in life, he found the point of flexure always anatomically the same, and that it corresponded to the point of union of the neck with the body, and at a great distance above the utero-vesical cul-de-sac. Nearer childhood, the more pronounced is the antelexion. As the development of the uterus progresses the antelexion becomes less, until finally the uterus is nearly straight. We should add, that we believe these truths are now generally recognized.

One of the pathological conditions which attracted the attention of Le Gendre (see page 4, *op. cit.*) was a peculiar hypertrophy of the fibro-dartoid tissue of the vagina, which surrounds the cervix in prolapsus of the uterus. This hypertrophy, he observes, prevents the descent of the peritoneal cul-de-sacs, which are thus less exposed to injury during operations on the cervix. We would suggest, that this fibro-dartoid tissue of the vagina *which surrounds the cervix* may, by reason of its great retractile property, account for the very considerable ascent, at least in part, of the uterus after Taylor's operation for eversion of the cervix, which eversion sometimes accompanies procidentia uteri. In his remarks on the pathological changes of structure in the uterine tissue, in cases of long-standing prolapsus, Le Gendre informs us that there is greater paleness and less density than exists normally. This tissue stretches and tears with more difficulty; it is considerably hypertrophied according to others; but he thinks that it is not yet proved that there is increase of the normal elements of the uterine tissue, a hypergenesis, or production of neoplastic elements.

Le Gendre states that, if a sound be introduced into the uterus (he alludes to experiments on the cadaver) while it is outside of the vulva, and again after the uterus is returned to its natural position, the previously lengthened uterus will be found to measure, with the sound, the normal length of the organ.

"During early fœtal life," says Le Gendre, "the cavity of the uterus is immediately continuous without separation with the cavity of the vagina; there is at this time no cervix, and no vaginal cul-de-sacs. The peritoneal cul-de-sacs are very far from the vulval orifice. The walls of the vulvo-uterine canal offer a striking resemblance in structure in all their parts.

"Later the superior part of this canal enters deeper into the pelvis and becomes invaginated. The uterus is divided into cervix and body, and the utero-vaginal cul-de-sacs are formed. Relatively the large size of the cervix, during the period of intra-uterine life, and the soft and loose structure of this part, permits the continuity of the different elements which form the utero-vulval canal to be readily traced by dissection. The mucous membrane is found to be more invaginated than the muscular layer, and the latter more than the fibrous envelope. Frequently the section of the uterus of a fœtus of five, six, or seven months shows distinctly the invagination of the different layers. The cervix at this period commences to be divided more distinctly into supra and infra-vagi-

nal portions. The peritoneal cul-de-sacs are perfectly formed, and are very deep, especially the posterior.

"Some months after birth, the utero-vulval canal enters upon a new phase of its evolution, which is continued to the commencement of menstruation, when the invagination of the utero-genital canal is completed. The uterus, vagina, rectum, and bladder, besides having a mucous membrane, a layer of cellular tissue, one of muscular fibres, have also an external fibrous layer, an anatomical knowledge of which is of great importance, in order to study, successfully, the subject of prolapsus uteri: The external or fibrous layer of the vagina is continuous, without separation, with the fibrous layer of the uterus. The former commences at the vulval ring opposite the hymen, and adheres by its internal surface, very intimately throughout its whole extent, to the muscular or subjacent dartoid layers which, in great part, are inserted upon the fibrous layer. Its external surface adheres very closely at certain points to the contiguous organs, and at other points has exceedingly loose connections with them. In the male, the fibrous membrane of the bladder is a reflection of the superior aponeurosis of the perineum from the sides of the pelvis, and envelopes the bladder completely. The same arrangement exists in the female except at that part of the bladder which is in relation with the utero-vaginal canal. At this part it is the fibrous membrane of the vagina, or rather a very important layer of this membrane which completes the fibrous envelope of the bladder. The fibrous coat of the rectum is reflected over the uterus and vagina in somewhat the same manner that the recto-vesical fascia is over the prostate and seminal vesicles in the male. With regard to the fibrous coat of the rectum, in its relation with the uterus, its arrangement is analogous to that in the male of the recto-vesical fascia. Above, this fibrous coat seems to divide upon the two surfaces of the posterior peritoneal cul-de-sac, which it restrains, keeps tense, and fixes firmly in front to the uterus and posteriorly to the rectum. Below, this fibrous coat is continuous with the enveloping utero-rectal aponeurosis, with which it is blended. Laterally the fibrous coat of the rectum is divided into two layers; one of which, the posterior, is reflected backward and around the rectum, to be inserted into the pelvic fascia and the sacrum. This layer forms the fibrous portion of the ligament of Douglas. The other layer extends forward and is continuous with that portion of the superior perineal fascia which furnishes a fibrous envelope to the bladder.

"The posterior layer, which more properly belongs to the rectum, forms a powerful ligament, the fibres of which are quite compact, and become very tense, when the uterus is forcibly dragged downward, with a pair of vulselum forceps hooked into the cervix. This layer, by its anterior surface, adheres closely to the utero-vaginal fibrous sheath, with which it is intimately blended, and with which it is pulled down in prolapsus uteri. By its internal surface this aponeurotic layer adheres very loosely to the rectum, except sometimes high up and above the peritoneal cul-de-sacs where the connection is more intimate: The rectum may be considered to be enveloped loosely in its aponeurotic sheath, in the same manner that the crural vessels are in the crural canal, and does not prolapse into the vagina when this sheath is made tense. Traction on this sheath only narrows a little the calibre of the rectum and lowers slightly its superior part. The whole strain of the traction is exerted on the pelvis where the utero-sacral ligaments are inserted."

"These ligaments keep the uterus in position, and when this organ is prolapsed they suspend it from the pelvis, and not from the rectum. The utero-sacral ligaments help to protect the hypogastric plexus from injury. This plexus after its descent from the lumbar region is covered in part by them. The tension of the aponeurotic fibres of the broad ligaments, during prolapsus of the uterus, causes compression of the hypogastric veins, in the same manner that compression of the veins of the neck occurs from tension of the cervical fascia, when the head is thrown forcibly backward. Thus is congestion of the uterus and other pelvic organs kept up during prolapsus of the womb."

Le Gendre adds that the round ligaments are not stretched in prolapsus uteri; we may add that they play an important part in ante flexion,

especially in the foetal uterine as shown, probably first, by Boullard, who studied this subject with great care.

"From the whole of the anterior part of the utero-vaginal aponeurosis, which is between the vagina and the bladder, is given off a great number of layers which are partly fibrous and partly muscular. Opposite the cervix, the lower part of the body of the uterus, and opposite the upper half of the vagina, these muscular layers or bands take their origin, and are directed downward and forward. They are, at different heights, inserted into the bas-fond of the bladder, into its neck, and into the urethra. These are the fibrous bands so well described by Jobert, and are of different degrees of obliquity. They are indeed fibro-muscular in character, and in falling of the womb drag downward the bas fond of the bladder, and cause cystocele. In prolapsus these little bands change their direction: When the uterus is situated normally in the pelvis they are vertical; but become more and more oblique in a downward and forward direction, as the uterus becomes prolapsed. At a certain stage of prolapsus, these little fibro-muscular bands are horizontal, and if previously active in favouring this condition on account of their muscular element, they may become passive as regards prolapsus, but will still act with force in the production of cystocele."

The experiments of Le Gendre on the cadaver are of great interest: On the cadaver of a woman aged thirty years, and a multipara, a traction of fifteen kilogrammes weight was made on the uterus. This traction was increased gradually during the space of an hour to fifty kilogrammes. Afterward the traction was maintained for about two hours at a weight of thirty kilogrammes as marked by a dynamometer; the cervix protruded three centimetres beyond the vulva. The point of interest to us in this experiment is, as Le Gendre states:—

"That the cavity of the uterus measured with the sound before the experiment five centimetres and at its termination nine centimetres, and that the lengthening was principally in the cervix. During the traction of fifteen kilogrammes weight, the *recto-uterine fold* of the peritoneum descended two centimetres; during the traction, which reached to fifty kilogrammes, this fold descended three and a half centimetres. The *vesico-uterine fold* of the peritoneum under a weight of fifteen kilogrammes was lowered one centimetre; but the additional weight of fifty kilogrammes did not budge it from this position. Thus it will be observed that the descent of the peritoneum was principally confined to the posterior peritoneal cul-de-sac. The utero-sacral ligaments were very tense. The broad and round ligaments were but slightly stretched."

In other experiments a long-continued and very moderate traction, which lasted without interruption for several days, produced procidentia with lengthening of the cervix.

There are certain practical inferences which result from the consideration of these last remarks: The ductile property of the uterine tissue, at that part of the cervix known as the isthmus, is such that if there be congestion of the cervix, or a very slight increase of weight of this part due to hypertrophy, there will be a force continuously acting below the principal points of suspension of the uterus. It matters not how small this force, or weight, which constantly tends to produce a downward displacement of the womb, the traction which this weight exercises must, we think, produce more or less elongation of the supra-vaginal portion of the cervix, and may in some cases at least offer an explanation of this condition. We have frequently been impressed with the action of the abdominal muscles in the production of prolapsus uteri; indeed, there are many points in this connection, which have, we believe, been overlooked, and which it would be interesting to consider; but this review has already somewhat exceeded the limits to which it was designed to confine it.

W. R. W.

ART. XX.—*Traité de Pathologie Interne.* Par S. JACCOUD, Professeur Agrégé à la Faculté de Médecine de Paris, Médecin des Hôpitaux, etc. etc. Ouvrage accompagné de figures et planches en chromolithographie. Tome premier. 8vo. pp. 824. Paris: Adrien Delahaye, Libraire-Editeur, 1869.

A Treatise on Medical Pathology. By S. JACCOUD, Professor Agrégé at the School of Medicine of Paris, etc. etc.

M. JACCOUD is the author of two works which have attained an enviable popularity, "*Les Paraplégies et l'Ataxie du Mouvement*," and "*Les Leçons de Clinique Médicale*," as well as of a number of articles which have appeared in the journals. These works are sufficient by themselves to establish his reputation as a careful and close observer of disease, as a correct reasoner, as an elegant writer, and as a successful teacher. His clinical lectures are as agreeable as those of Trousseau, and we do not recollect to have met with any other book in which so much instruction is conveyed in so pleasant a manner, or in which, in addition to a thorough knowledge of the nature of disease, a more profound acquaintance with anatomy and physiology and the bearing which both these sciences have upon pathology is manifested. The book, the title of which heads this review, will, we fear, not be so extensively read as either of its predecessors; for to the cultivated physician there is an attraction in a monograph not possessed by a bulky treatise on the practice of medicine, and the student, on the other hand, is not likely to import an expensive work, when there are so many excellent ones in our own language which may be bought at a comparatively small price. We say we fear, for having derived much pleasure and we think advantage from reading it, we do not doubt that others will find in it the same attraction. It is not, of course, likely that it will be found to contain much that is not to be met with in similar treatises, but there is much that is novel in the arrangement, and a *charm*, if we may be allowed the use of the word, in the manner in which the different subjects are presented. There is, moreover, a great evenness in the execution of the book. In a careful reading we have been unable to find a single chapter which appears to be indifferent, while many are of pre-eminent excellence, and some unequalled in any similar work we are acquainted with. This remark is especially true of the chapters on Cerebral Tumours and on the Diagnosis of the Seat of Encephalic Lesions, and of the General Remarks which precede the discussion of the diseases of the Encephalon.

M. Jaccoud's object in the preparation of this work was, we are told in the preface, to exhibit in a concise and didactic treatise the actual state of medical science, not only in France, but also in other countries, and to submit the whole of pathology to an analysis, at once physiological and pathogenetic ("*appliquer à l'ensemble de la pathologie la méthode de l'analyse physiologique et pathogénique*"). Both of these objects, we can say with pleasure, have been attained in the volume which we have received. No French author that we are familiar with has, moreover, displayed a greater knowledge of the medical literature of other languages. To every chapter is attached a list of the authors, and their works consulted in its preparation, which will be found to be very full and of great value. The treatise is divided into three parts. In the first are considered morbid conditions, common to the greater number of diseases; in the second local

diseases, classed according to the different apparatuses which they affect, and in the third general diseases.

The first part occupies ninety-two pages of the first volume, and comprises the subjects of Congestion, Hemorrhage, Embolus and Thrombosis, Gangrene, Dropsy, Inflammation, and Fever. We must regret that want of space prevents us from giving a full analysis of the author's views in regard to all these conditions; although they do not for the most part differ from those generally held here, they are stated so clearly, that even a beginner would find no difficulty in comprehending them. A brief *résumé* of his article on inflammation we shall attempt, as it has struck us as particularly excellent. He thinks two factors unite in the production of inflammation: 1. A derangement of the circulation and of the local exosmoses, or a vascular lesion; 2. A modification of the elements of the tissue itself, or a cellular lesion. To the former of these factors has been attributed the larger share in the production of the alterations of the tissues, and yet it is really the less important, for inflammation may and does frequently attack tissues, such as the cornea and cartilage, which are not supplied with bloodvessels, and in which there can consequently be no disturbance of the circulation. In these tissues, it is true, that congestion of the neighbouring vessels takes place, but the only change in the tissues themselves, and consequently the only one which is necessary to the existence of inflammation, is a modification of their nutritive cells. The microscope shows us that these cells are increased in size and filled with granulations; and in vascular tissues, that there is congestion of the bloodvessels with stasis of the blood. As a further proof that all the inflammatory changes are not of purely vascular origin, the fact is cited that the liquid found in the neighbourhood of the vessels of the inflamed part is not identical in chemical composition or in microscopical appearances with the serum of the blood. It is not likely, moreover, that the exudation exists preformed in the blood, for to admit this, it is necessary to believe that this substance either originates solely and by special election (*election spéciale*) in the vessels of the inflamed part, or originating in the general mass of the blood, is exuded only (*fatalement*) in the diseased part. An exaggeration of the nutrition of the cells of the part is, according to M. Jaccoud, at the bottom of the inflammatory process, and he therefore gives us the following definition: "Inflammation is a derangement of nutrition, provoked in the living tissue by an abnormal impression called an irritation, and characterized by the temporary exaggeration of the activity of the nutritive processes in the organic region subject to the irritation."

Fever is defined to be a pathological condition, characterized by an increase of the combustion and of the temperature of the organism. The latter, although secondary to, and dependent upon, the former, is a very prominent and important symptom of fever, for its presence or absence is alone sufficient to indicate the existence or non-existence of the febrile state. The normal temperature of the body is the result of two, to a certain extent, antagonistic factors: 1. The heat generated by the normal combustion of the tissues; 2. The loss of heat by evaporation from the surface of the body, and of the lungs, and through the secretions. While, therefore, it would seem that any cause interfering with the loss of heat would give rise to an increase of temperature, it has been found that the increased heat in fever is due practically to an increased combustion taking place in the interior of the body. The thermometer hence becomes a very valuable aid in diagnosis, and by a careful use of it we become not merely

aware of the existence of fever, but to a certain extent of the stage of the fever, and of its nature. Three plates are here introduced to show the markings of the thermometer in different fevers, and at various stages of the same fever, and the whole subject of the thermometry of disease is treated of at sufficient length, and with great clearness.

Our author does not attempt to advance a theory as to the nature of fever, and believes that none of those as yet brought forward are capable of proof. We cannot accept, he says, the theory that fever depends upon a paralysis of the nervous centre for regulating the amount of heat until the existence of such a centre has been demonstrated beyond cavil, and a similar objection may be made to the hypothesis, which attaches primary importance to the alteration of the blood, and to the removal from it of some substance (quinoidine for example), which acts as a moderator or regulator of combustion. He takes more pains to controvert the theory which supposes that the morbid cause acts first upon the sympathetic system as an irritant, giving rise to the rigor and to the contraction of the bloodvessels; and causing secondarily an elevation of the temperature, which is due not to increased production, but to diminished loss of heat. The stage of excitement is supposed quickly to give place to one of relaxation, and hence the congestion of the bloodvessels, the turgidity of the surface, and the increased combustion of the tissues. The section of the sympathetic in the neck is known to be followed by the two first of these conditions; but unfortunately for the acceptance of this theory, the third is not a necessary result of this operation. Moreover, paralysis of the sympathetic cannot be maintained in the face of the fact that in fever there is generally an increased frequency of the heart's contractions.

The second part of the work is devoted to a consideration of localized diseases, those of the nervous system being first considered. The general remarks which precede the discussion of the individual diseases are rather physiological in character, as M. Jaccoud holds that a proper acquaintance with the physiology of the brain is essential to an acquaintance with its pathology, and to a correct appreciation of its semeiology. The ordinary division of the cerebro-spinal system of the anatomist, excellent as it is for his purposes, is not found to be physiologically correct, and we must therefore consider it as consisting essentially of three apparatuses: 1. A spinal apparatus, including a peripheral portion—the nerves; a spinal portion—the cord; and a cephalic portion—the medulla oblongata, the pons Varolii, the crura cerebri, the tubercula quadrigemina, and the cerebellum. 2. A cerebral apparatus, including the two hemispheres. 3. An apparatus uniting the other two, and including the corpora striata and optici thalami. This division is thought to be justified by the following facts. The fibres of the cerebral hemispheres are not continuous with those of the spinal apparatus, the only connection being formed by the gray matter of the apparatus of conjunction; and secondly, no nerves arise directly from the cerebral hemispheres, the olfactory nerves being an apparent exception only to this rule. Physiology also teaches us that the phenomena of vegetative life are presided over by the spinal apparatus alone, that intellectual acts originate only in the hemispheres, and that the actions of animal life may, when they are involuntary or automatic, be referred to the spinal, but when voluntary must be referred to the cerebral, apparatus. A careful analysis of the symptoms of cerebral disease will sometimes enable us to make an accurate diagnosis of the seat of the lesion,

for it will not unfrequently happen that one form of vitality will be more affected than the others. Unfortunately, however, it will often be found impossible to classify diseases on this physiological basis, because the superior or cephalic part of the spinal apparatus, and the apparatus of conjunction, in common with the cerebral apparatus, are situated within the cranium, and above the crossing of the fibres in the medulla; consequently: 1. Lesions of these different parts will always cause paralysis of the side of the body opposite to the lesion; 2. Intellectual derangement may be produced, although the lesion is limited to the mesocephalon, on the one hand, by an interference with the manifestation of intellectual operations through a fault of conduction, and on the other by an abolition of such operations in consequence of the pressure caused by the lesion upon an organ inclosed in a cavity with resisting walls; for instance, apoplexy, which is a positive and direct sign of the cessation of cerebral activity, is occasionally a symptom of lesion of the spinal apparatus, as well as of the brain itself. Lastly, pathological lesions do not respect physiological limits. There is nothing more common than to observe lesions which implicate the superior spinal apparatus and the hemispheres.

While disorders of sensibility, of movement, and of intelligence, are all due to derangement of the normal excitability of the nervous system, either increased or diminished, it by no means follows that there must be, in all these conditions, a disease of the nervous structure itself; for, besides the integrity of the nervous system, to enable it properly to perform its functions, there should be the regular circulation of a nutritive liquid, a normal composition of the blood, and alternations of activity and repose. We have consequently an additional reason for great care in the interpretation of the so-called nervous symptoms, which may occur simply, as they do in fevers, from the circulation of an altered blood.

The two chapters on Cerebral Tumours and on the Diagnosis of the Seat of Cerebral Lesions, we have already indicated as among the very best in the book, and a further study of them has only confirmed the opinion which we had formed of their excellence. We feel that in endeavouring to present M. Jaccourd's views on these points, we have undertaken no light task. This difficulty of course does not proceed from any want of clearness on his part, for his style is remarkably clear and comprehensive, but arises simply from the impossibility of condensing all that he has said within the narrow limits of a review.

Under the head of tumours of the encephalon, we include all defined and persistent pathological productions which do not originate, either from suppurative encephalitis, or from cerebral hemorrhage. Even after this elimination there still remain several varieties which, although readily distinguished on the post-mortem table, frequently present during life insuperable obstacles to their recognition clinically. The reason for this is, simply, that almost all the symptoms to which they give rise depend rather upon their size and position than upon their nature. A tumour, it matters not to what class it may belong, is a foreign body in a cavity enclosed by resisting walls and only large enough to hold its normal contents, and must therefore cause, 1st. A compression, just in proportion to its size, of the whole mass of the encephalon; 2d. A pressure upon the parts of the brain in its immediate vicinity and upon the contiguous nerves, and a separation of the adjacent nerve elements; 3d. An irritation either directly of the parts immediately surrounding it, or indirectly and by reflex action of distant, but connected parts. For instance, a tumour so placed as to pro-

duce excitation of the third pair will give rise to internal strabismus, but the irritation may also be radiated to the gray layers of the medulla oblongata, and general convulsions be the result.

M. Jaccoud divides cerebral tumours in four classes: 1. Vascular: which includes aneurism and erectile tumours. 2. Parasitic: cysticerci and echinococci. 3. Constitutional: cancerous, tubercular, and syphilitic growths. 4. Accidental: fibro-plastic, cholesteatomatous tumours, glioma, &c.

Tumours of one class, it is true, are more apt to be found in certain portions of the brain than those of another, but not sufficiently often or exclusively as to justify us in basing our diagnosis on this fact alone. The existence of a well-marked diathesis or of parasitic cysts elsewhere should always be taken into consideration, but if too much relied upon, we may sometimes suffer ourselves to be led into error. Another difficulty arises from the fact that sooner or later all morbid growths cause certain alterations in their neighbourhood, which may be arranged under two heads: 1. Atrophy; 2. Turgescence of the cerebral tissues. The former, to a certain extent, may counteract the effects of the tumour; the latter, which includes inflammation, hemorrhage, congestion, and œdema, must always aggravate them. And it is an important point in the history of these affections that many of the earlier symptoms are to be ascribed to these secondary lesions. The cephalalgia, roaring in the ears, defects of vision, sense of formication in various parts of the body, delirium, &c., which are frequently the first manifestations of disease, may be thus explained; and as these secondary lesions are not necessarily permanent, but are liable to fluctuations, there is no difficulty in accounting for the remissions which are so frequently observed in the course of the disease. Some tumours have a greater tendency to give rise to alterations in the parts adjoining them than others. And this is true of all those belonging to the constitutional class, but especially of cancerous growths. Accidental tumours, on the other hand, are free from this tendency. Certain parts of the encephalon, as the hemispheres and the commissures, are much more tolerant of the presence of a tumour than others; the cephalic portion of what is called the spinal apparatus is by far the most intolerant. The paroxysmal character of certain of the symptoms may depend in some cases upon the fact that the excitability of the nervous centres is exhausted by long irritation and is regained after repose.

Hemiplegia is not a common occurrence in the beginning, but may arise during the course of the disease. Generally the lower extremity will be first affected, and later the upper, but the paralysis is rarely so complete as in apoplexy. Sometimes both sides may evince a loss of power, and thus occasionally incomplete paraplegia may be observed. In the rare cases in which all four extremities have been paralyzed, there have been either several tumours, or the tumour has been so seated as to cause pressure upon both crura cerebri. The sphincters are rarely affected, but in a case reported by Friedreich were the only muscles paralyzed. Sooner or later some diminution of intelligence occurs, especially if the attacks of convulsion be frequently repeated and of great violence. Nutrition is not necessarily interfered with, and derangements of the respiration only occur when the medulla oblongata, pons, or the vagi are affected. Cutaneous anæsthesia, which is generally preceded by symptoms denoting irritation, and is very rarely complete, is limited to the parts paralyzed of motion.

There are three satisfactory reasons why the diagnosis of the seat of a cerebral lesion is difficult: 1. The physiological attributes of different

regions of the brain are still undetermined, and this is especially true of the cortical portion of the hemispheres, which may be regarded as a kind of mosaic, the innumerable compartments of which are united to each other by fasciculi of fibres, and present a functional solidarity, which renders them capable of reciprocal compensation. 2. In that portion of the encephalon which M. Jaccourd designates as the apparatus of conjunction (*l'appareil de conjonction*), and which connects the cerebral and spinal apparatus, the elements of both of these are so confused, that it is impossible at the present moment for the anatomist to say what part belongs to the former and what to the latter. Moreover, in consequence of the careless manner in which autopsies have been made, we are not now in a position to state positively what lesions of this part of the brain are followed by derangement of motion, and what by derangement of sensation. Some careful observations which have been recorded justify us, however, in assuming that a lesion of the corpus striatum, the crus and thalamus of the same side, being healthy, gives rise to disorders of mobility. While, on the other hand, if the thalamus is the part exclusively affected, we have modifications of sensibility. 3. Among the many complex symptoms to which lesions of the brain give rise, there are very few which will enable us to localize them; in fact the symptoms of general compression and of irritation do not afford us the slightest aid, and it is therefore upon the *symptômes du foyer* that we must rely, and none are more reliable than those furnished by paralysis of cranial nerves. It will, therefore, be rightly inferred, that lesions affecting the medulla oblongata, the cerebellum, the pons Varolii, and the crura cerebri are those which interpose fewest obstacles to the recognition of their seat. In studying the different paralyzes which originate in this way, the question whether there is real or only apparent abolition of function—whether they depend upon an absence of the powers of voluntary excitation, or simply upon a defect in the transmission of this impulse, is to be taken into consideration. The former indicates a lesion of the hemispheres; the latter of the apparatus of conjunction or of the upper part of the spinal apparatus. But unfortunately this distinction is often impossible. In analyzing the disorders of sensation, also, it is important to distinguish between the loss of mere sensation and the loss of perception, as the latter is due to disease of the opposite side of the pons, the former to disease of the upper part of the spinal apparatus of the same side. Something may be learned from a careful study of the order in which the symptoms have presented themselves, and even more by an examination into the condition of the automatic movements, and of the electric contractility. If a derangement of ideation precedes by a long time the loss of motion, the cerebral hemispheres may be assumed with certainty to be the parts affected. If, on the other hand, this symptom be late in appearing, the lesion will not be found to be seated higher up than the corpora striata and thalami optici. The presence, however, of normal ideation with hemiplegia conveys more positive information than its absence, as the latter may indicate either a destruction of its centre or only defect in the conducting fibres. In the same way, the preservation of the automatic movements, and of electric contractility, points to a modification of the central part, their loss to one of the peripheral parts of the nerve. It will sometimes happen that the paralysis is antagonistic or crossed, that is, while the loss of power or of sensation is on one side of the face, it is the other side of the body which is affected. It will readily be understood, that in antagonistic paralysis, we have more indications of the seat

of the lesion than in what is known as uniform paralysis, because the former limits to a very much greater extent the series of possibilities. In the latter, the disease may be seated in any part of the opposite side of the encephalon, but in the former, it must be seated on the same side as the cranial paralysis, either at the point of origin of the nerve, or in some position where it can exert pressure upon the nerve within the cranium. Thus, for example, a paralysis of the left side of the face, dependent upon an encephalic lesion of the same side, indicates that this must be so placed as to make pressure either on the left side of the pons, or of the medulla, or on the left lobe of the cerebellum. In the former case, there may be right hemiplegia, in the latter, paralysis of the limbs may be entirely wanting. If there is paralysis of more than one cranial nerve, there is still more probability of our being able to make a diagnosis of the seat of the lesion. Thus, for instance, a motor paralysis of the face and limbs of the right side, with anæsthesia of the left side of the face, indicates some tissue change of the middle layer of the left side of the pons Varolii, behind the point of emergence of the trifacial. A lesion situated on the left side between the anterior extremity of the gray substance of the fourth ventricle, and the internal face of the crura cerebri at the point of emergence of the third nerve, will give rise to a motor paralysis of the face on the right side, with ptosis and external strabismus on the left side. Another circumstance, which will sometimes render the diagnosis easier, is the occasional occurrence of paralysis of both nerves of a cranial pair, but it should be recollected that the lesion may be so situated as to affect both nerves in their central portion, or both nerves in their peripheral portions, or one nerve in its central and the other in its peripheral portion. A diagnosis may here be made by a careful investigation into the condition of the automatic movements, and electric contractility of the muscles supplied by these nerves. As a general rule, double paralysis is seen only in disease of the pons, for it involves alterations too extensive to take place in the medulla oblongata without endangering life.

The derangement or abolition of speech may also furnish us with valuable indications. The loss of the memory of words is probably due to disease seated in the anterior lobes of the cerebral hemispheres, and in cases of derangement of what M. Jaccoud calls *idéation verbale*, it is probable that the position of the lesion will be the same. It should be recollected, however, in this as in analogous cases, that the function itself need not be disturbed, and its apparent abolition may be due chiefly to a defect of transmission or of execution. To the fact that there is no decussation of the sixth pair of nerves, we sometimes owe important indications as to the seat of a cerebral lesion.

A very short chapter is devoted to the description of an affection which has up to this time been very imperfectly studied in this country. Duchenne, who has reported several cases, and written upon this disease, has called it pseudo-hypertrophic paralysis. M. Jaccoud, however, prefers to give it a name, which, to a certain extent, at least, describes its anatomical lesion; he therefore calls it progressive muscular sclerosis. The prominent characters of this affection are, as implied by the names which it has received, a diminution or loss of power, and an increase of size of the affected muscles. Very little is known of the pathology and etiology of the disease. It is more frequent in early than adult life, affects boys more frequently than girls, and has been observed a number of times in the children of cousins. The microscopic examination of the muscles will generally show

an increase of the connective tissue at the expense of the contractile element; in other cases, however, an accumulation of fat is found to have taken place between the muscular fibres. It is probable, however, that the latter condition indicates a more advanced stage of the disease than the former.

The increase of volume of the paralyzed muscles is one of the most striking characteristics of the disease; it may, however, in some cases be wanting, and is always preceded by some diminution of power. The patient is observed to walk with his legs very far apart, and very soon he will be found to present a marked anterior curvature of the lumbar vertebrae. Sometimes affected muscles become the seat of fibrillar contractions, and sometimes the club-foot occurs, as the consequence of the unequal contraction of antagonistic muscles. The affected muscles do not contract readily when the induced current is applied to them, and this may sometimes be observed even before the increase in the volume takes place. There does not, on the other hand, appear to be any diminution of the susceptibility to the constant current. The electro-muscular sensibility does not present any constant modification.

We have devoted so much space to these few chapters, that but little remains for a consideration of the contents of the remainder of the volume. All the diseases of the nervous system are very fully discussed, and the author then proceeds to treat of the diseases of the respiratory and circulatory organs. These have been the subject of many treatises, and we owe our present knowledge of them so largely to the French school, that we do not think it necessary to give in detail M. Jaccoud's views on these points.

The chapters on the acute diseases of the heart and its membranes are as full as could be desired. We cannot, however, refer to them, further than to express a very favourable opinion of M. Jaccoud's description of these diseases. Valvular diseases are more interesting than these, because more frequently met with, and because they often demand a large share of skill and experience in their treatment. Too much prominence has been given, our author thinks, to the valvular lesion itself, and too little to the condition of the muscular walls of the heart. It is really to the latter that we must trace many of the symptoms which are ordinarily attributed to insufficiency of the valves, and a constriction of the valvular orifices. To quote M. Jaccoud's own words, "*c'est donc l'état du muscle qui domine la situation.*" The tendency of every valvular lesion is to produce enlargement of the cavity, which is situated behind it. Wherever insufficiency of the valves exists, dilatation is inevitable, for the cavity is required not only to contain the normal quantity of blood, but also that which regurgitates through the valve; in other words, if the capacity of the left ventricle be represented by 10, the ventricle will be required to hold, in cases of aortic insufficiency, not merely the blood which is brought to it by the pulmonary veins, but also that which regurgitates through the aortic valve, and its capacity will be eventually increased from 10 to 12, or even to a greater extent. If the muscular tissue be healthy, and the patient robust, an increased growth will take place, and the ventricle will in the end acquire the additional force requisite to put the increased amount of blood into motion. In constriction of an orifice, hypertrophy of the walls of the cavity behind the obstruction seems in some cases to take place without being preceded by dilatation. In both instances, however, the hypertrophy is compensatory, and the subject of heart-disease, when compensation has

been fully established, may positively be free from all distressing symptoms. The compensation is unfortunately not complete in all cases, or, having been so at one time, may in consequence of some internal disease, or of some excess, be destroyed, and we shall then have rapidly supervening upon its destruction, palpitation, dyspnœa, and dropsy—symptoms really not due to the valvular lesion, but to the dilatation of the heart. The condition of the organ which gives rise to these symptoms was called by M. Beau *asystolie*. In the treatment of the various forms of cardiac disease, our efforts should be directed to prevent if possible the occurrence of this asystolie, and therefore all remedies which have a tendency to produce a diminution of the strength, or those which have a depressing effect upon the heart, are to be most carefully avoided. The asystolie will now and then occur, it is true, as a temporary phenomenon, and will pass off as soon as its cause has ceased to act, but even under these circumstances, if improperly treated, it may become permanent, and even rapidly fatal. The patient whose heart is diseased is to be warned against excesses of all kinds, as these generally hasten the occurrence of fatal asystolie.

Mitral disease is spoken of as invariably the result of endocarditis, while, on the other hand, disease of the aortic valves may arise either from inflammation of the endocardium or from that of the inner coat of the aorta. The statement that disease of the mitral valve generally arises from acute inflammation of the endocardium is probably correct in the great majority of cases; but there is some reason to believe, however, that disease of the mitral valve may occasionally occur as the consequence of degenerative changes. In a paper "On the Murmurs Attendant upon Mitral Contraction," in the last volume of *Guy's Hospital Reports*, Dr. C. Hilton Fagge reports several of this lesion in which no history of an acute inflammatory disease of the heart could be obtained.

We are glad to find that M. Jaccoud devotes a few pages to a description of the signs furnished by inspection of the chest and neck. We have not infrequently seen clinical lecturers proceed to speak of the signs of disease obtained by auscultation and percussion before having applied to the diagnosis of the case any of the simpler of the physical methods. Inspection alone is of course not to be relied upon in diagnosis, but it is certainly not on that account to be wholly neglected, especially as it requires but little time for its application.

In the chapter on Aneurism the author explains the occurrence of double impulse in the same as not uncommon. The first pulsation is undoubtedly due to the distension of the bloodvessels caused by the systole of the heart. The explanation of the second is more difficult. He thinks, however, it is generally due to the closure of the sigmoid valves, although he admits that Bellingham may have been right in attributing it in some cases to a regurgitation into the sac during the diastole of the heart of a quantity of blood from the large arteries given off from the arch of the aorta. The second pulsation will then be felt, he says, only in those parts of the aorta which are affected by the closure of the sigmoid valve, or which are accessible to the reflux of blood from the large arteries at the base of the neck. The double pulsation is, therefore, a sign of aneurism of the ascending aorta or of the arch.

Since the state of insurrection in which Paris has been so long involved seems about to end, we hope soon to find fresh evidences of M. Jaccoud's ability and industry in the second volume of this valuable work.

J. H. H.

ART. XXI.—*Practical Midwifery and Obstetrics. (Including Anæsthetics.)* By JOHN TANNER, M.D., A.M., LL.D.; Member of the Royal College of Physicians; Obstetric Physician to the Farringdon Lying-in Charity, and Physician for the Diseases of Women to the Farringdon Dispensary; Fellow of the Linnean (sic) and Obstetrical Societies, etc. etc. 12mo. pp. 227. London: J. & A. Churchill, 1871.

THIS very *un*-practical book of "Practical Midwifery and Obstetrics" is the literary venture of one who, despite his numerous titles, appears to know little about his subject, and still less about his mother-tongue. To an affectation of conciseness he has sacrificed sense, style, and syntax; a laboured vivacity constantly involves him in rasping solecisms; whilst his teaching has not the merit of even mediocrity, for it is consummately bad.

We extend the sympathizing blush to the *fifty-five* "eminent Physicians of Great Britain and Ireland," whose names grace the dedication page, and "whose talents, professional attainments, and profound knowledge," etc. have won for them this unenviable distinction. For the preparation of this book, small though it be, the reading has been vast, in fact stupendous, and yet it is so artfully concealed as to be discovered only by another parade of *one hundred and forty* names of "authorities from whom the Author has derived information by personal interviews, or by extracts from or reference to their Works."

In a preface of little modesty, of many promises, and of more capital letters, we are told that: "The object of this Work is to afford the Accoucheur, in as concise a form as possible, compatible with clearness of description, and practical utility, a complete Guide and Handbook to Midwifery and Obstetrics. By its aid the Student will be enabled to go to the bedside of the Lying-in for the *first time* (sic) with perfect confidence in himself, and without the fear of being considered an *amateur*, either by nurse or patient." This use of the word "*amateur*" recalls an anecdote of Selwyn, which vastly amused the wits of his day. Having a morbid fondness for witnessing executions, he once went to Paris, where a notorious criminal was about to be broken on the wheel, and applied to the chief executioner for standing room on the scaffold. "Are you," asked the Monsieur of Paris, "the Monsieur of London?" "No," replied Selwyn, "only an amateur."

Should the glamour of so many first-class names—nearly one for each page of this book—and of so many first-class promises, beguile the reader, it will soon be dispelled by that worn-out, catchpenny frontispiece of two nude figures. Of course it is intended merely to represent "the relative Proportions of the Pelvis in the Living Male and Female Subjects," but—to tell the truth—it shows a good deal more.

The author's style ought to be good English, for how otherwise should a British savant express himself?—a savant with titles legal, literary, and scientific. Yet many of his most characteristic passages will require either recasting, or else to be turned into our own native dialect, before they can be made intelligible to the American reader. For instance, at page 42, the following sentence occurs: "Fatty degeneration often takes place to an extent sufficient to destroy the embryo, *and* is generally expelled a fortnight or three weeks after its death." At page 35, "Effluxion is the casting out of the ovum from the uterus *before its visibility*." In puerperal convulsions he gives "stimulating enemata of

turps”—whatever that may be—and in peritonitis, applies *it* (or *them*) to the stomach; whilst he perforates the head in order to introduce “the *flexis* of the craniotomy forceps.” Said Marie Antoinette, when told that the poor of Paris were starving for want of bread, “Why then don’t they eat cake?” The *naïveté* of this remark we have always deemed unapproachable; but, listen to a like gush of artlessness from Dr. Tanner: “When (p. 33) the toothache is very persistent, *I consider it advisable to get rid of it*, as the constant pain wears the patient out.” Who would not “get rid of” the toothache if he only could?

The author’s confidence in the use of anæsthetics produces an overweening confidence in the flexibility of the English language: “It appears,” he says, “that no death has ever occurred *in which it* can be directly attributed to the use of chloroform.” Again, we find (p. 79) “the skin (of the child’s head) is sometimes puffy and œdematous, feeling like a *breach*,” which is either a reference to an unusually large fontanelle, or else a generous emulation of the “Breeches Bible,” so termed by virtuosi on account of a ridiculous blunder, which has enhanced its value very much with book-fanciers. Apart from such specimens of orthography as the “sacro-iliac synchondrosis”—an offence repeated ten times—“placental soufflet,”—viz. a placental bellows or box on the ear—“albumenuria,” “*asteotomist*,” “*peritoneam*,” “*seculæ cornutum*,” “*Bandelocque*,” “*Greenbaugh*,” and “*Freericks*,” we have stumbled across some sentences, which, if read distinctly over the tomb of the late lamented Dean Alford, would certainly bring him up. Out of numberless examples we select the following: “The patient should be put on a low diet for a few days, and use cold applications to the pubes, rest in bed and cautioned to avoid stimulants.” “If the Cord comes first, the pulsation will be turgid when the child is living; while, if dead, flabby and pulseless.” “Postpartum hemorrhage may be the result of retained placenta, from an absence of contractile power in the womb; or, perhaps, the placenta has been expelled by uterine action, *but has relaxed again*,”—a relaxed placenta indeed! “The fourchette is generally lacerated in first labours, but when *it* extends through the perineum, it rarely heals by the first intention.” In mammary abscess, “Pressure by strapping is often of service, and support the breast by a handkerchief around the neck.” In his directions for “suspended animation” in new-born infants, we are pained to see that he thus encourages a curious superstition of the British lying-in chamber: “Extract the mucous (sic) from the child’s mouth, and *wrap it in flannel*.” Now, we have repeatedly been pressed for a canl, and once thereby made an old woman happy; but, why preserve the “mucous?”—why “wrap it in flannel?” and how can an adjective be wrapped up?

With grief we take leave of Dr. Tanner’s droll manner, for it has done us much good, to touch upon his matter. The rule may very safely be laid down that when an author trifles with the nine parts of speech, in revenge the nine muses will surely jilt him. Abundant proof of this axiom is found in the work before us; indeed, it is doubtful whether in so small a compass were ever compressed so many pernicious doctrines and so much bad teaching. Under the heading “Rigid Os or Soft Parts,” we find “the treatment consists in incising the cervix with a short pointed bistoury, or [in incising with?] a moderate bleeding, if the patient can bear it. Tartar emetic *may* be given, and lard should be well rubbed into the vagina to lubricate and cool the passages. *It might sometimes be advisable* to procure rest for the patient by administering a full dose of opium.”

This is putting the cart before the horse with a vengeance. Are incision and venesection to be employed at the outset? The merest tyro ought to know that patience, opium, and anæsthetics are first to be tried; next irrigation, Barnes' dilators or the forceps; followed, if necessary, by belladonna, tartar-emetie and bleeding; and if these prove unavailing, *then and only then, may the cervix be incised.* As for "lard," we believe its use will lead to naught but vanity and vexation of spirit.

In face presentations (p. 110), according to this unsafe guide, "the only thing that *requires to be done* is to assist the chin in making its rotation forwards and downwards by *introducing the finger into the child's mouth*, and making traction upon the jaw, and bringing it under the arch of the pubes. Should the head fail to rotate, the forceps must be applied, or the child delivered by turning." Now, in point of fact, usually the only thing "that requires to be done," is for the doctor to sit still, if he can, and twiddle his thumbs until Nature has turned the chin. If she cannot effect this, then he may lend a helping hand, by lateral pressure upon the temple, by the forceps or vectis, and preferably by the latter. But, Juno Lucina forbid that he should ever "introduce his finger into the child's mouth and make traction upon the jaw!" If this is to be the future line of obstetric practice, we shall devoutly pray that a kind and compensating providence may furnish the jaws of the coming infant with a double row of incisors, and masseter muscles of nut-cracking power.

After gleaning from pages 85 and 86, that in the mechanism of the first position of the "*head*"—*vertex*, we suppose he means—rotation is a something which does *not* take place, and that the head is born in a state of restitution, we naturally approach with fear and trembling his exposition of the second position. Let the author speak for himself, in capital letters as usual: "The Second Position of the Head is that in which the long diameter of the head corresponds with the left oblique diameter; i. e. with the forehead towards the left sacro-iliac synchondrosis, and the occiput directed towards the right foramen ovale or acetabulum." So far so good, barring the spelling, and the facts; first, that it is not the long diameter of the head (which, by the way, with him is the occipito-mental), but either the cervico-bregmatic, or a diameter lying between it and the occipito-frontal; and second, that if the occiput be directed towards the right foramen ovale or acetabulum, and the forehead towards the left sacro-iliac synchondrosis, there will be a presentation of the sinciput, or anterior fontanelle, instead of the occipital region. "In this position," he proceeds, "everything takes place exactly the reverse of that which occurs in the first position, and the left parietal bone is the most depending part." For this much he has good authority, and we will not stop to cavil, but he now goes on to explain the mechanism in the rollicking jargon of Punch's Medical Student. "The head," which, the reader will remember, was last heard of in the *left oblique*—"passes from the *right oblique* into the *transverse*, and thence into the *left oblique*, so that the *anterior* fontanelle now corresponds to the left acetabulum, and the *occiput* to the right sacro-iliac synchondrosis, and the part that first distends the labia is the posterior superior quarter of the left parietal bone." In other words, the forehead is at first towards the left sacro-iliac synchondrosis; then, by some locus-pocus, is found at the left acetabulum, from which it passes to the left ilium, and then back again to the left sacro-iliac synchondrosis; whence, not satisfied with *all* these erratic excursions, it makes a final jump back to the left acetabulum. Surely no Christian

fœtal forehead ever did or ever will act so; nor any Pagan forehead, not even *those* of the god Janus.

Nor does the following ungrammatical explanation of the accompanying figure, in spirited capitals, throw the least ray of light upon this most extraordinary jumble: "The Anterior Fontanelle and Frontal bone *is* towards the left Sacro-iliac Synchrondrosis, and the Posterior Fontanelle towards the right Acetabulum." After this confusion worse confounded, how unmitigated must be the anguish of the "Student" to learn, that the unexhausted fœtal head is equal to still further balancing, and that "The Third Position of the Head is an early condition of the second; and its aftercourse through the pelvis is the same. The head is subsequently, therefore, changed from the third into the second position. *It is usual, but scarcely necessary to describe it at all.*" We think not; no, indeed; not by Dr. Tanner. "Good God!"—exclaimed the once convalescing Douglas Jerrold, in needless alarm at not understanding one of Browning's poems—"am I crazy? or is the author?"

We have by no manner of means given all the specimens of bad teaching, bad spelling, and bad grammar contained in this book; for, small though it be, it is fairly alive with them. In addition, such contradictions as the following occur: "The perforator (p.77) should *not* be employed when the antero-posterior diameter is less than two inches. Even then, by the assistance of the cephalotribe, the head is with great difficulty brought down." Per contra, on page 143, "Craniotomy and Cephalotripsy may be resorted to *without hesitation* when the pelvic contraction ranges from 3''.25 as a maximum to 1''.5 as a minimum."

In the chapter on uterine flexions—for he has actually managed to squeeze in a chapter on flexions, and another on anæsthetics in this small but botched work—he gives six different forms of "*Hodge's pessary*," which we fear will give as many keen pangs to their illustrious inventor. Upon a close examination of these cuts we are quite ready to believe that Dr. Tanner has "seen Hodge's pessaries cause ulcerations, from pressure, deep into the anterior walls of the vagina, almost into the bladder." Some of them, indeed! look as if they could and would work their way through the sacrum itself, on very little provocation.

With regard to the use of the forceps, of course Dr. Tanner lags far, very far, behind the age. "The forceps," he says, "are applicable when the parts are well dilated, uterine action has subsided, and the patient has become *exhausted*." "In extracting, pull and move the handles in a *circular* direction, so that each portion of the passage may act as a fulcrum to the lever." It would go hard with us to find two rules worse than these.

In conclusion, whilst turning over leaf after leaf of this extremely facetious book—can it possibly be a satire on the London school of Obstetrics?—the idea kept haunting us, that the author is one of those full-blown cockneys who cannot pronounce the twelfth letter of the alphabet without swearing, and whose manuscript has been corrected by some proof-reader less wayward in his aspirates. We were, however, hardly prepared to find this suspicion amply confirmed by a clerical error on page 150, which could not have happened out of England: "When there is great pelvic deformity, recourse must be *add* to the Cephalotribe." This straw stamps the man and the book far better than the titles of "M.D., M.A., LL.D., etc. etc. etc." The well of English, once pure and undefiled, is getting low and muddy enough in all conscience, without being stirred up by such a writer as our author.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXII.—*The Manchester Medical and Surgical Reports*, October, 1870.
 Editors, S. MESSENGER BRADLEY, F.R.C.S., WALTER WHITEHEAD, F.R.C.S.
 Ed. Vol. I. pp. viii., 301. Manchester: J. E. Cornish, 1870.

THE editors in the preface to this volume modestly call attention to the fact that, although Manchester, with its suburbs, contains a population of over two millions, and medical charities to the number of fifty, and has had abundant opportunities to make herself a great centre for observation, "she has hitherto been silent, as though she were not in the world of medical literature." The volume is issued in the hope that it may remove the slur of professional apathy from the fair fame of the city, and endow her with a voice with which she may make herself heard and respected in the land. How well this object has been carried out we propose to show our readers by placing before them abstracts of the papers.

We shall call attention first to the medical papers.

Hydatids of the Brain. By JOHN ED. MORGAN, M.D., Oxon.—This paper opens with a detailed history of the symptoms observed in the case of a little girl, seven years of age, who died at the Manchester Infirmary, and at whose autopsy a large hydatid cyst, weighing sixteen and a half ounces, and occupying the anterior and middle lobe of the right hemisphere of the brain, was found. The cyst extended inwards in the direction of the lateral ventricle, from which it was separated by a thin translucent layer of brain tissue; a considerable portion of the corpus striatum and a smaller part of the optic thalamus being removed by the gradually increasing pressure of the cyst. It was not enveloped in a fibrous capsule, as is the case usually with hydatids found in other parts of the body, but came itself in immediate contact with the cerebral substance, which was otherwise entirely free from disease, not merely in the parts immediately surrounding the cyst, but elsewhere. Four smaller cysts, each about as large as an egg, were discovered in other organs of the body—one in the left lung, two in the right lung, and one in the anterior border of the right lobe of the liver. These cysts differed from the large hydatid in the brain, in being firmly attached to the tissues by which they were surrounded, and with which they were in vascular connection. The other organs of the body were perfectly healthy.

About a year before the child's death she had been suddenly attacked with convulsive fits, and from these her friends date the commencement of her illness. The fits were followed by a feeling of numbness and loss of power in the lower extremities, to which was shortly added an inability to control the sphincters. The mental faculties next became affected; but although the child looked dull, when roused she could answer questions intelligently. When first seen by Dr. Morgan, she is described as having the ruddy complexion of a country-reared child; but "in spite of this apparent look of health, there is an anxious expression about the face, and her forehead droops forward as though her head needed support, which she tried to afford it by constantly resting it upon one

or other of her hands." Her pulse was seventy-two, soft and compressible. Temperature 98.8°. Both pupils considerably, but equally, dilated. No paralysis of the eyeballs on either side, nor of any of the facial muscles. Loss of power in the lower extremities, but at no time paralysis of the arms. No apparent diminution of cutaneous sensibility in any part. The sight was lost. These symptoms continued until her death, the intellectual faculties never having been entirely lost, nor the speech having been at all affected.

Dr. Morgan has collected fifty-four cases, in which hydatids of the brain are said to have occurred; but in fourteen the accounts given of the parasites either point to the *cysticercus cellulosæ*, or are not sufficiently accurate to justify us in classing them among the hydatids. The remaining cases have been tabulated and appended to the paper. The cyst in the case reported by him is the largest single hydatid of which there is any record; in one instance, however, a "mass of hydatids was found in the right hemisphere, and in the lateral ventricle, the contents of which are said to have measured two and a half pounds of fluids." Hydatid cysts, situated in either of the cerebral hemispheres, or in the lateral ventricles, and not encroaching to any extent, upon the central parts of the encephalon, may frequently acquire a very considerable size before they prove fatal. When, however, they are located in the immediate vicinity of the pons Varolii or medulla oblongata; and when, also, several hydatids are scattered through various parts of the brain, or press upon its surface, life is usually cut off when they are still comparatively small. In one case, which came under the observation of M. Blin, one hydatid, no larger than a small nut, situated on the upper surface of the left side of the cerebellum, was the cause of sudden death. The largest hydatids have always been found in young children; this the author attributes partly to the fact that in early life, before the ossification of the calvarium is complete, the bones yield to some extent when pressure is exerted upon them from within, and partly also to the greater tolerance of rough treatment which characterizes the brains of young children. Another point of interest in Dr. Morgan's case is the fact that the cyst was not a barren one, but contained within its cavity vast numbers of echinococci. Among the forty cases in this table, there are only two others in which scolices were discovered. The unattached state of the hydatid in the brain which existed in this case is recorded as having been present in several other cases.

In regard to the symptoms noted in the forty cases which are tabulated, Dr. Morgan has found that headache is almost constantly observed in those who suffer from hydatids of the brain. Next in frequency come affections of the special senses, among which loss of sight is frequently alluded to, and its frequent occurrence will sometimes enable us to diagnosticate this affection from abscess of the brain; for, out of seventy-three cases of the latter disease collected by Dr. Gull and Dr. Sutton, sight was only defective in three. Epileptiform convulsions were observed in nineteen of the forty cases.

Two cases of recovery from hydatids of the brain have been recorded and are here referred to.¹ In both of these hydatid cysts were discharged. Hence, Dr. Morgan is not inclined to look upon the prognosis as utterly hopeless, but recommends operative interference.

"After removing," he says, "a portion of the calvarium, a syringe with a trocar and canula attached might be carefully inserted through the membranes into that portion of the brain in which the cyst is suspected to be met with, and

¹ One of these cases was made the care of M. Moulinié, and is transcribed by M. Davaine into his "*Traité des Entozaires*;" the other is reported by Dr. Fletcher in the *Association Medical Journal* for 1855.

its contents evacuated. The experience derived from sheep, in similar cases, seems to show that a fine trocar or wire may be passed, with a tolerable degree of safety, through the several lobes of one or other of the hemispheres, provided care be taken to avoid injury to the central parts of the brain and cerebellum. In referring to the hydatid found within the skull of my little patient, I remarked that so soon as even the walls of the cyst were punctured, the aperture continued to enlarge till the pouch finally rolled over upon itself. In some cases, then, it might simply be necessary to puncture the cyst."

He recommends, however, that the operation should only be performed in young subjects, as hydatids are infrequent, and the chances of error greater in those advanced in life.

Much importance is attached by the author to the fact that hydatid cysts very rarely give rise to inflammation or congestion of the cerebral substance immediately surrounding them, but produce atrophy of all of the parts of the encephalon on which they encroach; taking themselves the place of the structures they may happen to invade. As the symptoms ordinarily attributed to a cerebral tumour are really dependent upon the local changes which it induces in the surrounding tissues, it hence follows that an hydatid cyst may exist for a long time without making its presence known. In cases of cancer of the brain, we would have the great emaciation which usually attends malignant diseases to guide us to a correct diagnosis. Scrofulous or tubercular tumours of the brain rarely occur in subjects free from other manifestations of the corresponding diathesis, and a syphilitic growth may generally be diagnosed from a consideration of the history and of the concomitant symptoms. Our author has, however, forgotten another form of tumour of the brain, at least as common as hydatids. We refer to cerebral aneurism. In this affection we may have the same absence of symptoms of local irritation, and of those of constitutional disease, and a differential diagnosis must, in many cases, therefore, be impossible.

On the Cause and Effects of Reflex Nervous Irritation. By ARTHUR RANSOME, M.B.—In the case reported in this paper various nervous symptoms, most evident on the right side of the body, were attributed by Mr. Ransome to the irritation set up in consequence of an abscess seated "between the uterus and the rectum, a little to the right side." The following are some of the symptoms observed. Contraction of the right pupil. Edema and erysipelatous blush of the right side of face. Hyperæsthesia and increased sensitiveness to the galvanic current of the right side of neck. Twitching of the right leg and arm. Partial paralysis of the bowels; and unequal perspiration of the two sides of the body, and albuminuria. After death, both the kidneys were found to be diseased, but the right was almost pulpy from the amount of degeneration.

Syphilitic Post-partum Hemorrhage. By S. MESSENGER BRADLEY, F.R.C.S.—Mr. Bradley reports in this paper a case in which excessive hemorrhage from the uterus occurred a week after labour, and persisted in spite of the use of astringent injections, only yielding when mercurial preparations were employed. In two instances in which he had opportunity of inspecting the uteri of women who died of phthisis while suffering from syphilis, shortly after their confinement, he found the organ large, imperfectly involuted, the mucous membrane turgid and thick, with numerous eroded circular patches scattered over its surface, much resembling in appearance syphilitic ulcers of the fauces, and the uterine tissues soft and pliable throughout.

Remarks on One Hundred and Thirteen Cases of Forceps Delivery. By J. THORNBURN, M.D.—Dr. Thornburn presents an analysis of these one hundred and

thirteen cases of forceps delivery, occurring in various classes of life, as a contribution towards the Statistics of the Results of Midwifery Operations. In this number but one death occurred after the application of the forceps, and in this case it does not appear that death could have been at all referred to the operative interference with the labour, a result which demonstrates conclusively the want of reality of the dangers so often attributed to it. Twenty-three of the children were born dead; but in the delivery of nine of these, after the failure of the forceps, other means, as turning and craniotomy, were resorted to, leaving only fourteen deaths in the one hundred and three cases in which the forceps were alone used. There are some other valuable points in the analysis of his cases, but for these we must refer the reader to the paper itself.

On Vaso-Respiratory Physical Signs. By J. THORBURN, M.D.—The modifications of the respiratory sounds produced by the action of the heart, under certain circumstances, form in part the subject of this paper. As most of these are familiar to well-educated physicians, it is not worth while to repeat them here, except to mention that Dr. Thorburn speaks of a pulsatile crepitation due to the action of the heart upon a diseased lung; and of a pulsatile respiratory murmur, the mode of production of which is analogous to the preceding. He calls attention also to the fact that a cardiac murmur may occasionally be distinctly heard after full expiration, in consequence of the withdrawal of the lungs from over the heart, when at other times it is inaudible, and says that no careful auscultator ever considers his examination of the heart complete if it be not auscultated under these circumstances. This is perhaps true; but Dr. Thorburn does not seem to be aware that a murmur is sometimes caused by the prolonged holding of the breath,¹ a fact perfectly well known to most expert auscultators, who prefer that the examinations should be made while the patient is breathing tranquilly.

A Case of Disease of the Lymphatics of the Abdominal Integuments, with Occasional Discharge of Large Quantities of a Chylous Fluid. By WILLIAM ROBERTS, M.D.—There are very few cases on record similar to the one reported in this paper by Dr. Roberts, and its value has been much increased by the care with which the notes have been prepared for publication. The patient was a man, æt. forty-five, who had until about three years before his death enjoyed good health. At that time, however, he began to suffer from a succession of large abscesses, principally seated on the trunk. After all the abscesses had healed, he picked off a scab which still remained in the right iliac region, and immediately a pale watery fluid, exactly like gum-water, began to exude. He estimated the amount of fluid that escaped on this occasion at two or three pints. Soon after, he noticed ten or a dozen pale, transparent vesicles, no larger than pins' heads, scattered in the right iliac region. Later, they became more numerous, and dotted the lower part of the abdomen on both sides of the middle line, almost as low as the pubes on the one hand, and as high as the umbilicus on the other. At the time of admission into the Manchester Royal Infirmary, his general condition was noted as good—there was no fever, the temperature being only 97.4° in axilla. The total number of vesicles is said to have been about two hundred and fifty. In their normal state they were closed, but a slight violence was sufficient to rupture them. The quantity of liquid discharged varied. On some days it would amount to several pints; on others, it would be only sufficient to moisten the cloths with which the patient girded himself. The character of the discharge also varied. Sometimes it was like thick milk; sometimes like

¹ See Dr. Da Costa's paper "On Functional Valvular Disorders of the Heart," in the number of this Journal for July, 1869.

skimmed milk, and sometimes perfectly pale, like gum-water. After standing a few minutes it set into a tremulous jelly. In a few hours there was a separation into clot and serum. It contained albumen, fibrin, and fat, but no casein. The vesicles were always fuller and whiter after a meal; but when the patient was feverish, they became pale and flaccid. When a vesicle was gently pressed with the tip of the finger, it was immediately emptied; its fluid contents escaping into the deeper parts. After the pressure was withdrawn, the vesicle slowly filled again. The fluid was compared with some chylous urine, which a patient in the ward at the same time was passing, and neither chemically (excepting proper urinary ingredients) nor microscopically could any distinction be made between them—a result which was rendered still more interesting by the fact that Dr. Roberts' patient did actually pass, on two separate days, chylous urine. The temperature was always low until near the close of his life, when it rose in consequence of the supervention of acute tuberculosis, of which he died on May 22d.

We extract from the notes of the autopsy the following account of the examination of the skin in the diseased area:—

“On making a vertical section through the skin and subjacent parts, it was at once perceived that the disease involved essentially the *cutis vera* and the subcutaneous tissue. The tendinous, muscular, and peritoneal strata were in every respect normal. The skin was immensely thickened, and formed, with the subcutaneous tissue to which it was structurally united, a thick pad or layer of tissue, varying from half an inch to an inch thick. When fresh, the cut surface had a pale rose, and somewhat fleshy or glandular appearance. This tissue was traversed by short channels or lacunæ, varying from the width of a crow-quill to that of a hair. By making numerous thin sections vertically and horizontally, and examining them with a lens and the microscope, these lacunæ could be seen to communicate freely with each other by small, smooth orifices. The vesicles evidently constituted the surface boundaries of the more superficial lacunæ. The lining membrane of the lacunæ and of the vesicles was smooth and glistening; and, when gently scraped with a knife, it yielded a small quantity of whitish debris, which, under the microscope, resolved itself into spheroidal and nucleated cells, resembling those which were found in the discharge during life.”

Dr. Roberts is inclined to believe that the true pathological lesion in this case was hypertrophy of the lymphatic network, by which its channels become varicose. He further believes that as the disease advanced

“the contained cells assume by degrees the property and function of the cells lining the lacteal ducts and lacteal glands; that the more superficial of these varicose enlargements project above the surface of the skin, or of the mucous membrane, as the case may be; and, lastly, let some of these superficial enlargements become ruptured, and discharge their contents externally, or into the urinary passages, and the conditions are presented for the production of chylous urine.”

The appearance presented by the patient is very well shown in the plate which accompanies this paper.

Several other cases, presenting many points of resemblance to Dr. Roberts' case, are referred to in this paper, and it will be remembered by the readers of this Journal, that in the number for April, 1863, page 397, a report of three very similar cases was noticed.

On the Local Application of Carbolic Acid in Uterine Diseases. By Dr. LLOYD ROBERTS, M.D.—Dr. Roberts has found carbolic acid a useful application in various forms of uterine disease, as, for example, ulceration of the os and cervix uteri, with or without hypertrophy, chronic inflammation of the uterus and cervix with excoriation, follicular disease of the cervical canal, chronic uterine

catarrh, rodent ulcer, and cancer. He believes that it occupies in escharotic power a position intermediate between the milder nitrate of silver and the more powerful corrosive caustics.

An Account of the Present Outbreak of Relapsing Fever in Manchester. By JOSEPH WESTMORLAND, L.R.C.P. Ed.—Relapsing fever appears to have presented the same general characteristics in Manchester as were observed in the late epidemic in Philadelphia. Dr. Westmorland's paper is carefully written, but we find in it only one fact in regard to the disease with which we were not familiar, and that is, that women who are menstruating at the time that the subsidence of the fever occurs, do not, as a general rule, perspire as profusely as others. On the other hand, the author does not appear to have observed that the temperature is frequently higher in the relapse than in the first paroxysm.

Cases Illustrating the Value of Small Blood-lettings in Certain Forms of Heart Disease. By HENRY SIMPSON, M.D.—Although the plural number is used in the title of this paper, there is but one case reported. The patient seemed about to perish in consequence of embarrassment of the action of the heart from over-distension of the right ventricle, when great relief was afforded by the withdrawal of a small amount of blood.

A Report on Seventy Cases of Epilepsy. By D. J. LEECH, M.B., and R. DACRE FOX, M.R.C.S.—A good deal of statistical information in regard to epilepsy will be found in this paper—much of it in the form of tables. The conclusions reached by the writers do not differ from those of Dr. Russell Reynolds. In reference to hereditary influence, we find the following:—

“One thing, however, the history of our patients renders probable, and it is, that hereditary disease plays a more important part than has generally been supposed in the causation of epilepsy. The more minutely the family history was investigated the greater was the difference noted between the frequency of nervous disease in the relatives of epileptics, and in those of others not suffering from the same diseases: we know of no reason for supposing that ours were exceptional cases. There is one other point to which we wish to draw special attention, and that is, to the relation which existed between the post- and inter-paroxysmal condition. It seems probable that a careful observation of the post-paroxysmal state may be to some extent a guide to the prognosis in certain cases.”

It is rather curious that a larger number of male than of female patients ascribed their fits to physical influences, whereas the respective numbers of the two sexes attributing them to psychical causes are exactly reversed.

On Obstructive Suppression of Urine. By WILLIAM ROBERTS, M.D.—Dr. Roberts gives the name of obstructive suppression of urine to a class of cases

“in which there is no primary defect in the kidneys, nor in their vascular or nervous supply, but in which the suppression is due to some mechanical obstruction in the ureters or pelvis of the kidney which impedes the flow of urine. Generally the cause of the obstruction is the impaction of a calculus in the ureter of a person who has only one kidney, or at least only one capable of secreting urine, but it may sometimes be the blocking up of the terminal portions of the ureters by the progress of a morbid growth involving the trigone of the bladder. Much less frequently, congenital malformation of the ureters, or of the renal arteries will constitute an impediment to the outflow of urine. Suppression from obstruction is rarely complete, in most cases urine being voided during its continuance, it may be a few ounces, or it may be a few pints.”

The character of this urine, Dr. Roberts says, is distinctive: it is pale and watery and of low density, and may be accidentally coloured by blood, but it is defective in the proper urinary pigment, and, as a rule, is free from albumen—differing in all these respects from the urine passed in ischuria renalis. In refer-

ence to the manner in which obstruction acts in causing suppression, we extract the following:—

“As soon as the obstruction is established, the urine begins to accumulate above it; the accumulating urine determines an upward pressure, first in the ureter, then in the pelvis of the kidney, and ultimately in the uriniferous tubes. As the urine goes on accumulating, the pressure within these channels necessarily increases, until at length the pressure so created is sufficiently great in the uriniferous canals to counterpoise the pressure within the renal bloodvessels. When this point is reached, the secretion of urine is arrested and total suppression ensues.”

The urine which escapes from time to time through the obstruction will have been secreted under high pressure, and will, in addition to the characters already noted, be deficient in urea. Even when suppression is absolute, seven or eight days elapse before the special symptoms of uræmia make their appearance, but when these do appear the end approaches rapidly, and death is not delayed beyond two or three days. Life is seldom prolonged beyond the eleventh day when the obstruction is complete, but a case is recorded by Rayer in which death occurred on the twenty-fifth day, only two ounces of urine having been passed during the whole course of the illness.

In regard to the treatment, Dr. Roberts says all remedies capable of exciting the contractile power of the ureter, or of relaxing spasms, may be employed, but thinks that more benefit will result from the employment of mechanical means, and recommends, especially, kneading, or shampooing of the renal region and over the course of the ureter. Ten cases are reported in this paper, some of them of great interest.

Notes on Mucous Disease. By WALTER WHITEHEAD, F.R.C.S. Edin.—In our notice of Dr. Eustace Smith's work on *The Wasting Diseases of Children*, published in the April number of this Journal, for this year, we gave an abstract of his description of “Mucous Disease.” We shall, therefore, call attention briefly only to the more important points in Mr. Whitehead's paper. It will be remembered that the disease “is characterized by the secretion of mucus of an abnormal character over mucous surfaces, in which condition the mucus is prone to consolidate into masses, shreds, or tubular casts. These concretions form and exfoliate periodically, each exfoliation being critical, and immediately followed by an amelioration of the symptoms which aggravate up to this point. This critical period is accompanied by pains of a spasmodic character, and of variable intensity.”

The mucus may be discharged from the bowel: 1st, in a more or less inspissated condition; 2d, in a concrete or semi-solid condition. The mucous concretions are not always easily recognized when mixed with the motions, but their nature may generally be recognized if they are floated in water. In some cases they are found in masses the size of walnuts; in others, we get extensive membranes, thick, and of considerable firmness and tenacity. The formation, exfoliation, and expulsion of these mucous structures observe a regular order; each stage of the disease being attended by characteristic symptoms, which have been described in the notice already alluded to. A microscopic examination of the concretions reveals the following construction. “They are composed of layers of a semi-solid, transparent, hyaline, amorphous matrix, in which spherical cells are imbedded together with epithelial cells in various stages of growth, free nuclei, crystals of the triple phosphate, and undigested and undigestible matter.”

A chemical examination of the mucous casts, made by Dr. Andrew Clark, showed that their matrix “is fibrillated by acetic acid. Careful washing and

compression yielded a fluid abundantly coagulable by heat and nitric acid. Prolonged digestion of the casts at an elevated temperature in a solution of nitre produced no fluid abundantly coagulable, or precipitable by acetic acid." The disease occurs much more frequently in women than in men, and generally in persons between thirty and forty years of age. The phlegmatic temperament seems to predispose to it. Among the more common symptoms are dyspepsia, palpitation of the heart, a depressed and desponding condition of the mind, a feeling as if the digestive tract were raw in places, and a variable condition of the tongue. In addition to these, successive crops of eruptions, and the ulcerations left by them, can frequently be detected in the inside of the lips, cheeks, gums, and tongue. Occasionally, too, membranes, resembling those discharged from the bowel, are expelled from the bladder, and in women, during menstruation, from the uterus. The remainder of the description of this disease is so like that given by Dr. Smith, that we shall simply refer our readers to the analysis which we made of his views on this subject.

Mr. WHITEHEAD sums up his conclusions respecting the disease as follows:—

"I. That the mucous membrane, like the skin (and is not the one looked upon as inversion of the other?) is prone, under certain conditions, in certain constitutions, to develop products unnatural to their functions. It is not natural for the skin to produce eczema, neither is it natural for mucous surfaces to produce mucus in a concrete form.

"II. (A.) That the proximate cause of the symptoms referable to this disease is the hypersecretion and accumulation of mucus on the free surface of mucous membranes; such accumulations sheathe and prevent the healthy performance of the functions natural to the part, and thus induce immediate and remote results, the effect of such suppressed functions. (B.) That this hypersecretion indicates a want of balance between nerve-force and germinal matter. (C.) That the nerve-force is perverted by irritation. (D.) That the exciting causes are numerous. (E.) That it is a character of mucous secretions under the influence of irritation for its cell-elements to increase, and its viscosity to diminish. (F.) And that in the disease in question the prolific cell-formations become entangled in the albuminous fluid in which they are found, and present the membranous structures before referred to."

The prognosis is not unfavourable in recent cases, or in those in which the cause of the irritation can be removed, but whenever the disease becomes chronic, it is generally found to be intractable to remedies. The principal points in the treatment are as follows:—

1. "Discover and counteract any cause, either in direct contact, or in the immediate vicinity of the secreting surface, which can be traced as a source of irritation, such as accumulations of scybala, an inflamed pile, or the use of any drugs known to be hurtful in this condition of the system." This applies with especial force to drastic purges. Belladonna and enemata may be given to relieve constipation. 2. "Reinvigorate the strength and allay the nervous irritability. 3. Remove the accumulated mucus; and 4. Prevent its re-formation." To fulfil the 2d indication, bromide of potassium, the various preparations of iron, attention to the skin, and the regulation of the diet are recommended. To meet the 3d, injections of solutions of soda, potassa, and lime may be used, and the re-formation of mucus will be best prevented by the use of astringent solutions. The paper is illustrated by ten cases, and appended to it is a full bibliography, which adds very materially to its value.

This completes the medical papers. Perhaps our readers will have reached the same conclusion as ourselves, that they are not all of equal value, either as regards their subject or the manner in which that subject has been treated, but that the collection as a whole reflects credit upon the writers. We cannot close

this notice without expressing the hope that a series so auspiciously begun may not be allowed to come to a termination for lack of support. J. H. H.

The first surgical paper is on *Operation for Ununited Fracture*, by Mr. A. W. STOCKS, Surgeon to the Royal Hospital, Salford. The case was of a boy, ten years of age, with old fracture of the right tibia and fibula, which had been fruitlessly operated upon, three years previously, by some unmentioned method. After some preliminary treatment with phosphate of iron, strychnia, and nourishing diet, an operation was performed after the plan proposed by Mr. Jordan of Manchester, which consists in reflecting flaps of periosteum from either end of the bone, which ends are then sawed diagonally, accurately joined together, as the angler splices a broken rod, and the periosteum placed over them. The progress of the case was most satisfactory, and adds the weight of one successful result in favour of this mode of operating.

Two Cases of Deep Abscess treated by Carbolic Acid, are recorded by Wm. H. BARLOW, M.D. Both cases appear to have occurred in private practice. The first was one of psoas abscess in a man aged thirty-five years, which had existed four years, and was dependent upon disease of the lumbar vertebræ. After a futile resort to change of air, tonics, and cod-liver oil, the abscess was opened with all the precautions of Professor Lister's method, and with the happiest result, the discharge gradually diminishing, and after the removal of a spicule of bone four months later, the cavity of the abscess became obliterated, and the patient has enjoyed excellent health ever since. The second was a case of disease of the dorsal spinous processes in a young woman eighteen years of age, where the same treatment was adopted with temporarily encouraging results, the abscess almost entirely drying up, but the patient succumbed two years later to disease of the kidneys. Mr. Lister's plan is highly commended, although it is admitted to be cumbersome and inelegant. We have ourselves seen a psoas abscess empty itself, a quart at a time, and the patient recover without the aid of antiseptic putty.

Mr. STOCKS next contributes a paper narrating an instance of *Excision of Hypertrophied Cervix Uteri*, occurring in a patient forty-one years of age. Great difficulty was experienced in attempting the removal of the part by the écraseur, three of which instruments came to grief in the attempt, and the operation was finally accomplished by the use of the knife without any trouble from hemorrhage. The patient had a rather checkered convalescence, the most interesting item in which, from a surgical point of view, being that she suffered a well-marked attack of pyæmia proceeding to the formation of abscesses in the neighbourhood of the ankle-joint, from which, however, she ultimately entirely recovered, but had not menstruated at the time the article was written.

Mr. ANDREW BOUTFLOWER, House Surgeon to the Manchester Royal Infirmary, relates a case of *Traumatic Tetanus*, under the care of Mr. Southam, which followed compound fracture of a phalanx in a girl sixteen years old, twelve days after the receipt of the injury. During the attack, which was of a mild character, 40½ grains of the extract of physostigma were administered by the skin, and 49½ grains by the mouth, the patient making a good recovery. We wish we could share the opinion held by the reporter of this case, that Calabar bean is likely to be of value in the treatment of tetanus. We, also, led by what Dr. Fraser and others have written upon the subject, have tried the remedy with but slight encouragement to continue its use, and we fear that this new remedy must take its place along with the many that have preceded it, which have been equally vainly tried to cure this distressing disease.

W. C. WILLIAMSON, F.R.S., Professor of Natural History in Owens College, writes *On Some of the Sequelæ and Treatment of Scarlatina*. The author having, by special circumstances, had his attention drawn to diseases of the ear, was struck with the large number of cases presenting themselves for treatment, the origin of which was attributed to scarlatina, which fact has led him to make a special study of the latter affection. In three hundred and ninety-three cases of disease of the ear, attended with otorrhœa, scarlatina appeared to be the proximate cause in one hundred and seven, and finding in most of these patients well-marked evidence of depressed vital powers, he was led to believe that the same tonic treatment he found effectual for the cure of the otorrhœa might exert a favourable influence upon the cause of it. He finds that in many cases of scarlatina, mostly of a mild type, inflammation extends *via* the Eustachian tube to the mucous membrane lining the cavity of the tympanum, which cavity soon becomes distended with its own secretion, unable to escape through the tube occluded, as it is, by the congestion of its walls; ulceration eventually attacks the membrana tympani, and the membranes closing the fenestra ovalis and fenestra rotunda, and a communication is established between the labyrinth and the meatus auditorius externus, with great impairment of the sense of hearing. We are not instructed as to the best method of treating these complications when they arise, but the author relates nine cases illustrative of those more seriously complicated instances in which brain mischief is added to the other troubles. From his researches and experience, Professor Williamson is convinced that the best method of treating scarlet fever is by free stimulation from the very start, and he does not hesitate to administer to a child seven years of age a bottle of champagne every twenty-four hours. Since adopting this line of practice, he has met with almost no cases of otorrhœa or nephritis, guarding against this latter complication by rigid attention to the protection of his patients from exposure of any kind, and insisting upon prolonged confinement to bed and room, which latter treatment we cannot help regarding as a very important element of his success.

A Case of Sympathetic Disease of the Eye, is the title of the next article, by R. DACRE FOX, M.R.C.S., Resident Medical Officer, Manchester New Workhouse. A man forty years old, with previous healthy history, having lost the sight of his left eye by chronic inflammation, unaccompanied with pain, suffered with some obscure nervous symptoms, consisting of loss, both of power and sensibility, in the extremities, with subsultus tendinum, which gradually proceeded to true clonic convulsions. The attacks were paroxysmal, at intervals of some weeks, between their occurrence the patient being well. After the expiration of fifteen months, during which time all treatment had been fruitless, the eye having become painful, attention was directed to it, and it was removed and found to be entirely disorganized. Since the performance of this operation, in January, 1870, the patient has enjoyed good health, there having been no return of his nervous symptoms up to the time at which the volume was issued, late in the same year. We must regard the title as a misnomer and likely to lead the attention away from the character of the case, which appears to us to have been one of reflex nervous manifestations dependent upon peripheral irritation.

Mr. BOUTFLOWER reports a case of *Popliteal Aneurism*, under the care of Mr. Heath, in a man thirty-five years old, where digital compression, prolonged for seventy-five hours, effected a cure.

Dr. DAVID LITTLE, Surgeon to the Manchester Royal Eye Hospital and Hulme Dispensary, also records *A Case of Diffuse Popliteal Aneurism* resulting from a wrench in a man thirty-one years of age, in which, after ligation of the femoral artery, gangrene of the extremity having supervened, the thigh

was successfully amputated in the upper third while the gangrene was progressing.

Next in order is a *Tabular Statement of One Hundred Cases of Strabismus Convergens*, operated upon by Dr. LITTLE and communicated by C. E. GLASCOTT, M.B., House Surgeon to the Manchester Royal Eye Hospital. Sixty-one of the cases were in females, thirty-nine in males. The greatest number occurred between seventeen and twenty-three years of age, the extreme limits being fourteen months and forty-seven years. The left eye was the one affected in fifty-five cases, and in thirty-nine the trouble existed in the right eye, while in six the squint was alternating. The range of the angle of squint extended from two to four and one-half Paris lines. The principal cause appeared to be slight hypermetropia, varying from one-fiftieth to one-twelfth. Two myopes were among the patients. The operation of Von Graefe was the one adopted in all the cases, and in only seven was a second performance of it on the same eye requisite. Perfect success resulted in ninety per cent., a majority of the remainder declining further interference, being satisfied with the "cosmetic" effect already produced. In only four cases was suture of the tendons resorted to. The tables present a valuable statistical report, which, however, will hardly admit of further analysis, and the paper, though so special in character, is much the most important surgical one in the volume.

MR. EDWARD LUND, F.R.C.S., Lecturer on Anatomy and one of the Surgeons to the Manchester Royal Infirmary, contributes the longest surgical paper in the volume, *On some of the more Recent Methods of treating Wounds*. He considers the difference of practice existing among surgeons as in large measure accounted for by the different reparative powers of their patients, determined by the variations in their mode of living, and tells us that he excludes wounds of the mucous membranes from further consideration, as foreign to his purpose. It is held that the grand object of all surgeons has ever been to exclude the air and prevent putrefaction. The tendency of the atmosphere to promote decomposition is regarded as proved by all experience, and the existence of organic germs in it, capable of acting as ferments, is considered as certain in the light of modern experiments. Suppuration is regarded as always injurious *per se*, of which it is always desirable to limit the amount. The formation of pus is thought to depend upon the vascular excitement kept up by the presence of the irritating ammoniated products of putrescence, and in accordance with these views those substances which are now most in vogue in the treatment of wounds are the very ones which possess powerful antiseptic qualities. Of course this is all merely preliminary to a laudation of carbolic acid—for, putrefaction is the cause of most of the secondary evil consequences of severe wounds, carbolic acid is the best preventive of putrefaction, *ergo*, carbolic acid is the treatment for severe wounds. Mr. Lund does not consider the presence of organized germs essential to decomposition, but merely circumstantial, and "the true source of putrefaction must be sought for in the contact of animal matter, already itself undergoing molecular change, with animal matter no longer able to resist such change by the contending influence of the vital force." The author regards carbolic acid as the best and most manageable substance at present known to prevent putrefaction, but expresses the hope that a more perfect substitute, without the defects it is admitted to have, may yet be found. The Listerian method is admitted to be hardly applicable for amputation wounds. Mr. Lund's style, though clear, is diffuse and elaborately ornate, but we do not see the appropriateness of the motto selected, "he jests at scars who never felt a wound," as the class of wounds of which Romeo spoke are hardly amenable to treatment by carbolic acid. The actual matter of the article, which at the same time is

hardly new, might have been advantageously compressed into one-fourth the space occupied.

MR. THOMAS WINDSOR contributes a paper on *Retinitis Pigmentosa; its Seat and Nature*. He relates an interesting case of the affection, reviews what has been written by German ophthalmologists upon the subject, and arrives at the following conclusions: "1. That in some, probably in many cases, the disease commences and is chiefly located in the outer layers of the retina. 2. That the disease is probably inflammatory in its nature, and that the inflammatory or nutritive processes in the adjacent portion of the choroid, the inner layers of the retina, the optic nerve, the vitreous and the lens are secondary."

The remaining surgical paper is by MR. LUND, upon a case of *Excision of the Knee-joint* upon the antiseptic method. The operation was performed under the flow of a carbolic acid lotion, and every effort was made to exclude the air afterwards. The result of the treatment appears to have been perfectly satisfactory to the operator, though as the patient was still under his care when the article was written, five months after the operation, we do not think a better result was obtained than might have been procured by simpler means. The formation of pus was prevented except on one occasion, when some of Mr. Lister's precautions were neglected, for which our author reproaches himself, though no apparently serious effects followed the neglect. But if the abortion of pus is attained, it is evidently regarded as an end with which all reasonable men should be satisfied, even if the healing of wounds is somewhat retarded.

The surgical papers taken together are hardly what we should expect coming from a place where, as the preface says, "machinery in unexampled abundance is in action on every side, producing accidents of endless variety in rich profusion," it being curiously noticeable that there is but one case of surgical accident, and that a trivial one, recorded in the book. But it is sometimes difficult to start a new project, and while we congratulate our brethren of Manchester upon the appearance of their first volume, we will only express the hope that their next may contain a greater variety of surgical material. S. A.

ART. XXIII.—*Transactions of the Obstetrical Society of London*. Vol. XII. For the year 1870. 8vo., pp. l., 428. London: Longmans, Green & Co., 1871.

FOR the convenience of our readers we shall not follow the desultory manner in which the cases are necessarily reported in the volume before us. Still further, as our space forbids more than a very brief summary of the various papers, we shall aim at exposition rather than at criticism; and therefore refrain as much as possible from comment, but group together kindred subjects.

Annual Address.—This was delivered by DR. GRAILY HEWITT, who was re-elected President of the Society. After reviewing the past year's work of the Society, he gave the usual obituary notices of deceased members. Among these is so generous a tribute to the memory of the late Prof. CHARLES D. MEIGS—an Honorary Fellow of the Society—that we cannot refrain from making the following quotation:—

"Dr. Meigs was a very distinguished ornament of his profession, and a most remarkable man. In our department of medical science, to which Dr. Meigs devoted his great talent, he has left an imperishable memento in his numerous contributions to obstetric literature. * * * * It is impossible to read any of Dr. Meigs' writings without becoming infected, I may say, with a degree of

enthusiasm in reference to the subject treated. Acuteness and force, and a vehement desire for the truth, are his great characteristics as a writer, while his works overflow with a liveliness most unusual in medical dissertations—a liveliness which is sometimes overstrained indeed, but which, nevertheless, constituted an attractive feature. Personally, I must confess to a great admiration for Dr. Meigs; a passage of his on the subject of diagnosis, some years ago, arrested my attention. ‘Diagnosis,’ says Dr. Meigs, ‘is in practice like Captain Greatheart in Bunyan, encountering and overthrowing all obstacles, so that even Apollyon himself could by no means oppose a bar to his habit in his practice of succeeding always.’ Indeed, here we have the key to Dr. Meigs’ character. So devoted was he to clinical investigation, so devoured, so to speak, with the idea of seeing and investigating for himself, that an intimate friend of his, as Dr. Meigs relates in the preface to one of his works, thought it necessary to point out to him the error he was committing in neglecting the study of older writers—an error he at once admitted and set to work to rectify in his usual energetic manner.”

A Contribution to our Knowledge of Puerperal Diseases; being a Short Report of Eighty-Nine Cases, with Remarks.—In this long and extremely valuable paper, Dr. J. BRAXTON HICKS has confined himself to his consultation cases alone, and from these are excluded all those in which serious symptoms supervened to instrumental or manual operations. These limitations have been made in order that the phenomena might be studied from a strictly uncomplicated point of view, although with regard to the latter limitation—as Dr. Hicks well remarks—“serious symptoms after operations (excepting placenta prævia) are really uncommon unless associated with erysipelas, scarlet fever, and other external causes.”

Cause, not Type, is the basis of his classification of puerperal diseases, and the classes are divided into the following groups:—

Group 1.—*Having an ascertained or probable cause.*

	No. of Cases.	Deaths.
<i>Class 1.</i> —Scarlet fever.		
A. With the usual rash	20	13
B. Without rash—15 distinctly, 2 probably exposed to the fever	17	14
<i>Class 2.</i> Erysipelas	6	4
“ 3. Diphtheria	7	3
“ 4. Typhus or typhoid fever	2	2
“ 5. Decomposition of uterine contents	9	4
“ 6. Emanations from sloughy wound	1	1
“ 7. From puerperal fever	1	1
“ 8. From mania?	4	3
“ 9. Pyæmia, from sore nipples?	1	1

Group 2.—*Cause uncertain.*

A. Symptoms appearing before or during labour	4	3
B. Symptoms appearing about 3d to 5th day	17	13
	<hr/> 89	<hr/> 62

Thus it appears from this table that scarlet fever (with rash), as a source of serious and fatal mischief, stands at the head of the list. But Dr. H. is by no means sure that this disease does not enter more largely into the first and also into the second group as a disturbing and unrecognized element. For he is disposed to think that the indistinct rash attributed to supposed pyæmia may

in some cases be a scarlet fever introduced unsuspectedly from without. Again, positive cases of puerperal scarlet fever present certain peculiarities, differing from the non-puerperal cases. Thus, although the rash is often of extreme intensity, it is generally limited to the trunk; sore-throat is seldom complained of, and the cervical glands rarely show any swelling or tenderness. Further, the exanthemata sometimes occur without rash; sometimes the intensity of the poison may cause death during the period of the incubation of the rash. There may be certain conditions of the human body which do not permit the ordinary manifestations of these diseases, and the sore-throat and skin-rash cannot therefore be regarded as the essential characteristics of scarlet fever. For instance, the poison producing erysipelas can act fatally upon the puerperal woman without any external skin affection. Finally, it is a significant fact, not only that puerperal disturbances are always associated with epidemics of scarlet fever, but that puerperal scarlet fever appears on the third day, which coincides with the appearance of so-called "puerperal fever." The consideration of these and similar facts leads to the importance of recognizing the variability of diseases, for we cannot say *a priori* that the poison of scarlet fever or of erysipelas shall only assume one mode of exhibiting itself. Indeed, the clinical history of Dr. H.'s cases points to this conclusion, which is thus interpreted.

After the most simple labour there is always a certain amount of bruising and ecchymoses about the cervical portion of the uterus. These, in an ordinary state of health, are soon recovered from; but when the processes of life are disturbed by the poison of scarlet fever, erysipelas, etc., the natural tendency to recovery is not only checked, but deterioration of the material effused takes place. Inflammation of the uterus and of the adjacent parts is set up, to end in the well-known complications attending the puerperal state, such as phlebitis, pyæmia, embolism, etc. The same result will be obtained by any influence, moral or physical, which depresses the vital powers, for a bruised part will suppurate in an unhealthy person, while it will rapidly recover in a healthy one. The presence of decomposing secretions in the uterus, besides their local effect, may cause the same result by producing toxæmia, then interrupted repair of the bruised tissues, thus leading to the development of metritis, cellulitis, peritonitis, pyæmia, etc.

The reported cases of puerperal scarlet fever occurred almost invariably about the third day, seldom beyond the fifth—the rash following a day later—and ordinarily terminated in either local or general secondary troubles, such as metritis, cellulitis, peritonitis, pyæmia, etc. Very often a woman during gestation, had resisted continuous exposure to the scarlatina poison, but so soon as she fell into labour the symptoms appeared. To explain these facts, Dr. H. is forced to assume, either that the pregnant woman possesses a wonderful power of resistance, or that the disease is communicated to her during labour through the medium of the vagina—in other words, by inoculation, which shortens the period of incubation. If the disease is thus conveyed, it is not improbable that its action may be rendered more violent and rapid than when received through the medium of the lungs. In support of this position he cites a statement made by Mr. Paget that, after operations or accidents, erysipelas, scarlatina, and measles "are most apt to appear like a local disease, first at the seat of injury, and there to be more intense."

In this consultation practice of Dr. Hicks, but few cases of erysipelas appear; which contrasts very strikingly with the records of hospitals, where it is so frequent a cause of puerperal disturbance that puerperal fever has been termed an erysipelas of the peritoneum. This immunity he explains by the relative infrequency of erysipelas in private practice as compared with scarlet fever; and by

the fact that the latter disease is common to children, who are brought into close relations with pregnant women; whilst erysipelas usually attacks adults who do not require such assiduous nursing.

Nine cases are reported of serious troubles connected with an offensive state of the lochia and of the vaginal discharges. This condition, caused as it is by the retention of clots or of portions of membranes, may give rise to metritis, cellulitis, and peritonitis of the worst type; in fact acting in a somewhat similar way with erysipelas, diphtheria, and poison from the dead. For this he recommends the firm contraction of the uterus by ergot and disinfectant intra-uterine injections of carbolic acid or of the permanganate of potash.

Of acute puerperal mania he met with ten examples, of which eight had offensive lochia. He finds it difficult to classify mania as a cause, and is more disposed to consider it as an effect of toxæmia upon an irritable brain. Among the total of eighty-nine cases there is only one of puerperal fever communicated by the medical attendant. This fact would be very gratifying, were it not, on the other hand, that in some of the cases of scarlet fever the poison was undoubtedly conveyed by the physician.

The conclusions of the foregoing remarks are: (*a.*) That puerperal fever is rarely traumatic, viz., from injuries sustained in labour—but dependent in the majority of cases on a poison conveyed from without. (*b.*) That puerperal disturbances are usually associated with zymotic diseases. (*c.*) That the removal of the supposed cause has at once removed the disease. (*d.*) That if we can prevent the contagion of scarlet fever alone, we shall have reduced the number of cases by at least one-half; and if attention is paid to clearing the uterus of its offensive contents, we shall remove a considerable number more. (*e.*) That the physician, when attending a case of scarlet fever or of erysipelas, should be doubly on his guard, and not wait upon a woman in labour unless he has changed his clothing, or otherwise thoroughly disinfected his person. Finally, that it is best always to remove a pregnant woman from a house in which the poison of scarlet fever may be lurking.

We have given but a meagre summary of the author's views, and of course could not reproduce the affluence of facts with which he illustrates and sustains them. Our space necessarily compels us to hasten on to the interesting discussion upon them which ensued at a subsequent meeting; for in fact the reading of this paper occupied one whole evening.

Dr. WYNN WILLIAMS agreed with the author as to the baneful influences of the scarlatina poison on the puerperal condition, and accepted his first class of cases without reserve. He could not, however, assent to the statement that the greater number of the second class had imbibed the poison *per se* from exposure to its influence. During the prevalence of scarlatina the atmosphere is not only primarily vitiated, but also loaded with the toxic or septic emanations from the putrid throats of patients. Should these septic emanations or vibrios come in contact with the discharges of the parturient female, they would act as a ferment and cause them to become decomposed. Thus the patient becomes affected, not with scarlatina, but with septicaemia. This position he sustained by a case in point, and then passed on to the practical inference, that when a patient is suffering from offensive lochia she must be treated locally, by washing out the vagina and uterus. This he preferred to do with a solution of iodine, as by its volatility, which is increased by the heat of the body, it would be more likely to be brought into contact with any septic poison lurking in the folds of the mucous membrane, and therefore not reached by the fluid alone.

Dr. ROBERT BARNES sustained the author in his division of puerperal

diseases into the two classes of autogenetic and heterogenetic. We must first recognize the disease, and then determine its origin, whether from an external or internal source. His own experience coincided with that of Dr. HICKS, that the heterogenetic was by far the most frequent cause, and that mainly from the poison of scarlet fever. Being the most virulent and the most active of zymotic diseases, it is easily propagated, and therefore *the most frequent* source of puerperal fever. The numerous cases of puerperal and other fevers in new houses he was disposed to attribute, not to imperfect drainage, nor to the fact that the first occupants were usually primiparæ—as Dr. H. held—but to the custom that obtains with builders of digging out the gravel, selling it, and filling in with the foulest putrefiable rubbish. He objected to the hypothesis advanced by Dr. WILLIAMS, that the scarlatina poison, entering the puerperal woman, worked mischief, not as scarlatina, but as something else. To him it was always scarlatina, modified it is true in her by the puerperal state, so that the sore-throat and rash might be absent, and yet capable of being communicated from her to others. Considering the vast predominance of heterogenetic puerperal fever, originating from scarlatina, erysipelas, hospital gangrene, etc., he was doubtful whether there existed an essential puerperal fever, arising strictly out of the puerperal state, that could give rise to an epidemic. The autogenetic forms proper did not seem to him to have active powers of propagation. For instance, a septicæmic fever starting from placental decomposition usually began and ended in the patient attacked, not being liable to spread to others. So with other varieties of autogenetic puerperal fever.

Dr. SNOW BECK was glad to find that he was not alone in the belief, that various epidemic diseases did not undergo an entire transformation, to be converted into a new and eminently contagious disorder called “puerperal fever.” He further contended that there was no disease peculiar to the puerperal period which could be called “puerperal fever:” but that those epidemic diseases retained their specific character, and pursued their usual course even to propagation, although the usual symptoms were masked. He also held with Dr. BARNES that there was another class of puerperal affections, known as septicæmia, which was neither epidemic nor contagious, and which arose from the injurious impregnation of the system by offensive or other discharges. For this class the intra-uterine injection of disinfectants was singularly successful.

Dr. TAYLOR argued that the analogy of the uterus (now considered obsolete, we think) after delivery to a recently amputated stump would point to many causes other than scarlet fever as a source of puerperal disease. He asked whether a previous attack of scarlatina rendered a woman less liable to an attack of puerperal fever.

Dr. ROGERS could not agree with the author that the term “puerperal fever” should be abolished, but thought it ought to be restricted to those cases of septicæmia arising either from within through the absorption of putrid discharges, or from without, as when an accoucheur has been dissecting, or handling morbid specimens. He also asked how long a time the scarlatina poison remained incubating in the system of a pregnant woman, and whether the attending physician was not the most probable source of contagion.

The President, Dr. GRAILY HEWITT, concurred most fully in the views of the author, and stated that his own experience led him to regard puerperal fever as not an affection of an essential and specific nature, like measles and variola. He further believed that the proportion of puerperal fever cases originating from self-poison was considerable, but then the disease was seldom communicable.

In answer to Dr. WILLIAMS, Dr. HICKS said that in his paper he had pointed

out the various stages of the disease. First we had to contend with the primary poison of scarlet fever; then, if the patient lived, with metritis, peritonitis, etc., arising from the imperfect repair of the parts bruised in labour; and finally with the secondary affections, such as pyæmia and embolism. To Drs. Taylor and Rogers he replied, that undoubtedly medical men would far more often convey the disease, were it not that the poison of scarlet fever was so readily dispersed, and the adult so commonly protected by a previous attack. But he had no data from which to determine how long a woman ran risks of contagion after the disease had ceased to appear in the house.

Persistent Sickness; Labour induced after full Period had elapsed; Scarlatina in the Room.—A patient of Dr. WYNN WILLIAMS suffered from persistent sickness throughout the whole period of gestation, in spite of every treatment. Her confinement was expected on the 14th of February, but up to the 28th inst. she lay in a very critical state without any pains of labour. As the os uteri seemed “dilatable to any extent,” a catheter was passed up between the membranes and the walls of the uterus. In about an hour labour set in, followed in nine hours more by delivery. About the middle of February her children living in the same room with her had scarlet fever, and one of them died; but although the shock threw her somewhat back, she soon rallied, and certainly suffered in no way from the presence of this poison.

Cephalotribe.—Dr. KIDD, of Dublin, presented to the Society his straight cephalotribe, and with it four casts of foetal heads, which were taken after the operation and before the instrument was removed. These heads had been caught at different points, but in every one the base of the skull had been canted, not crushed, between the blades, so as to put it in the most favourable position for passing a pelvis narrowed in the conjugate diameter. The straight instrument, in his judgment, catches the head more in the middle than a curved one, and there is consequently less danger of slipping.

From this opinion of Dr. KIDD we venture to dissent; for, since both a greater superficial area of the foetal head will be grasped by a curved blade than by a straight one, and its line of slipping will not be in the direct line of traction, but at varying angles to it, it follows that the friction resulting from these two accessory modes of action must be greater, and as a consequence the gripe will be more stable. This cephalotribe and that of Dr. J. Braxton Hicks have worked such wonders as compressors and tractors in cases of extreme pelvic contraction, that it seems difficult to conceive of instruments with a greater range of power. Dr. Hicks has very kindly selected for us a perfect specimen of his own cephalotribe, which we shall be glad to show to any of our readers who may be interested in this subject.

The Advantages of the Early Use of the Long Forceps.—Two cases of ordinary interest only are given by Dr. F. H. DALY, who calls for a more early use of the forceps when the head is *above* the brim, than is recommended in English text-books. For this advice he assigns the reason that a large proportion of medical men resort to this instrument only “*when the patient is in extremis*,” and therefore when she is liable to run such great risks as to bring the operation into disrepute. Fortunately, in our own country the forceps is regarded not only as the child’s but the mother’s instrument, and such culpable delay, as Dr. D. describes, is here very rarely to be met with.

A Remarkable Case of Absence of Vagina, with Retained Menses in Utero and Fallopian Tubes.—Dr. C. H. F. ROURN narrates the particulars of this interesting case. A girl, aged fourteen, but looking fully twenty-five, for the past year had violent menstrual colic every five weeks. All the external organs were well developed; the urethra, however, being dilated so as to admit

the finger. No trace of a vagina existed excepting a sort of cæcum about half an inch in depth. *Per anum* a fluctuating tumour as large as a child's head was discovered about two inches up. When a sound was passed into the bladder and the finger into the rectum, the space interposed between them seemed only one-eighth of an inch in thickness. By dissecting up with the knife held flatly, and by using its handle, he succeeded in separating about one inch of tissue between the bladder and rectum. To guide these incisions, the bladder was pulled upwards by a catheter held in the hand of an assistant, whilst the operator kept one finger in the rectum. The index-finger was now introduced into the wound and forced up until it reached the womb, which was at once tapped. A very thick crimson fluid welled out, but so slowly that its exit was helped by injections of a weak solution of iodine. A large gum-elastic catheter was then substituted for the canula of the trocar, and left *in situ*. On the seventh day the patient died with symptoms of shock and internal hemorrhage. At a post-mortem both Fallopian tubes were found full of fluid, and dilated, the one to the size of an egg, the other to that of an orange. In the latter a perforation had taken place, from which a teacupful of grumous fluid had escaped into the cavity of the abdomen. Dr. Routh believed this to be the first case in which, at one operation, the vagina had been formed and the uterus tapped. He also contended that the tumour felt *per anum* was the larger Fallopian tube; and had he made a rectal puncture before operating, its rupture would have been prevented.

In commenting upon this case, Dr. PLAYFAIR related the particulars of a similar malformation in a well-developed girl aged 23. As no trace of a distended uterus could be found, he concluded that this organ was congenitally absent, although, judging from the menstrual nixus, the ovaries were undoubtedly present. He therefore objected to an operation, but was overruled, and an artificial vagina was formed, without, however, reaching the uterus. The patient made a good recovery, but has since found it necessary to wear constantly a porcelain plug. If it is removed for a single day the vagina at once contracts, and she has had it twice redilated with sponge tents. This case raises the question whether an artificial vagina will remain open of itself.

Mr. SPENCER WELLS thought that a rectal puncture would expose the patient to the danger of fecal gas entering the cavity as the fluid escaped; and that opening up the vagina gave the same relief with less risk. Further observation is required to teach us, in cases of retained menses, whether it is best to let the fluid escape gradually, or to press it away and wash out the cavity with iodine injections. He had not yet learned why in some cases the operation afforded relief, and in others led to imminent peril or death.

Dr. ROGERS also objected to the preliminary rectal puncture, but on the ground that the menstrual fluid would escape into the abdominal cavity, and give rise to fatal peritonitis.

Dr. PHILLIPS called attention to the contracted state of the uterus in the specimen from Dr. Routh's case, as opposed to the generally received opinion, that this organ remained dilated after the withdrawal of the menstrual fluid. The Fallopian tubes were generally much distended in these cases, and this condition inclined him to the belief that it was the escape of some of the menses into the abdominal cavity, along these patulous tubes, which caused the great danger of this operation.

Cases of Bilocular Uterus.—Dr. ROUTH was called to see a lady who was a martyr to very severe dysmenorrhœa. The os was a single small opening; the cervix also small and prolonged. The cervical canal being tortuous, was freely opened up with a hysterotome; but it was subsequently found necessary to

dilate it by several sea-tangle tents. It was noticed that sometimes the sound passed as if the uterus was anteverted, and sometimes as if retroversion existed; but this was attributed to its extreme mobility. The external os having closed, was again incised and dilated, when the finger, about half way up, came in contact with what was supposed to be a fibroid tumour dividing the canal in two. This proved to be a septum, on one side of which the sound passed three inches upwards and outwards towards the left side. On the other side it penetrated two and a half inches in a direction downwards and to the right. This makes the second case of bifid uterus that Dr. Routh has met with, and both were so accidentally discovered that he believes this malformation to be more frequent than is generally supposed.

Case of Vagina and Uterus divided by a Septum.—A woman consulted Dr. W. R. ROGERS on account of great pain experienced in coition. He found a loose fleshy band or septum dividing the vagina in two, and diminishing its calibre. This septum was attached to the centre of the cervix, in which two openings existed, one on each side. Sounds passed into each opening did not touch, but penetrated into two distinct cavities. Permanent relief followed an operation in which the entire vaginal septum was removed.

Dr. WILTSHIRE remarked that this condition of bifid uterus might explain some of the cases of superfœtation; conception having taken place in either uterus at different dates. While readily granting this, we think that superfœtation is more frequently determined by the normal existence, in the earlier months of utero-gestation, of a space between the decidua reflexa and decidua vera. Before the obliteration of this "decidual cavity," which takes place by the coalescence of the whole aspect of these two decidual membranes, it is easy to conceive that a second ovum may be reached by the spermatozoa, and become fecundated months after the first ovum has descended into the cavity of the uterus.

Case of Cicatrices from a Burn requiring Division during Labour.—A patient of Dr. E. F. WILLOUGHBY was severely burnt in childhood by standing over a fire which she had kindled; hoping thereby to conceal it, and thus to escape punishment. Extensive scars existed on the inner sides of the thigh and around the pudenda, which were devoid of hair. A broad perineal band of cicatricial tissue prevented the complete abdnction of the thighs, making it also difficult to reach the os with the finger. Delivery being impracticable, this band was divided completely at one end, and nicked in the middle; but as this did not avail, four additional incisions were made in the vulva, and enlarged from time to time before the head could emerge.

Dr. MURRAY had met with a similar case in which the utmost dilatation of the vulva was equal to a two-shilling piece. The upper and sound portions of each labium were divided laterally to the extent of two inches before the head could be made to pass. Two silver sutures on each side caused perfect union of these cut surfaces. He had also made use of the same measure to save a perineum which had given way at a previous labour, and had subsequently been restored by an operation.

Malformation of the Heart.—Dr. HEYWOOD SMITH exhibited a specimen removed from an infant seven days old. There was but one auricle; and practically only one ventricle, as the septum was rudimentary, and extended but one-quarter of the normal distance.

The other specimen, taken from a child nine months old, was presented by Dr. W. S. PLAYFAIR. She was deeply cyanotic, but otherwise well nourished and in good health. A few days before death extreme dyspnœa set in, and proved fatal. Both auricles were normal, but only the right ventricle existed,

the left being rudimentary. Both the aorta and pulmonary artery arose from the right ventricle.

Dr. WILTSHIRE alluded to a case of uni-ventricular heart taken from the body of a lad aged 19. This showed that life was possible in a human being provided with a heart resembling that of a turtle.

Monstrosities.—In the first reported case, Dr. JAMES OSWALD, finding an arm presenting, turned and delivered the feet, but could not drag down the body. With much difficulty he made out that the head was firmly adherent to the posterior wall of the uterus. These adhesions were carefully broken up, and then the patient was easily delivered of a *still* monster. The placenta also proved adherent, but its removal was not attended with hemorrhage. No history could be elicited of fright, or of any other cause in explanation of this unusual condition.

In the other case, which is illustrated by a wood-cut, Dr. HORNIBLOW found the woman bleeding and the os uteri filled up by a soft lacerable mass, which he mistook for a placenta prævia. He therefore turned, but had some difficulty in extracting the child. This was due to a "huge liver," lying exposed, as it were, at one end of the child. The thin abdominal walls had ruptured probably at the moment of escape of the amniotic fluid. This mass was the presenting part, and not the placenta, which covered the fundus. During the fourth and fifth months of her pregnancy, the woman had nursed a gentleman who died from nœmic convulsions.

Birthmarks.—Dr. WILTSHIRE exhibited two children of one mother, an infant aged three weeks, and a boy a year and a half old. The right arm of the infant was black and slightly hairy, while scattered over the body were similar patches. The mother attributed these marks to a fright, in the third month of gestation, from a *black cat*. The boy had the middle and ring fingers of his left hand webbed. This condition was accounted for by a burn of the fingers, which the mother had met with during pregnancy. Now, however credulous we may be upon the influence of maternal impressions—for we once delivered a child whose prepuce was neatly amputated in utero, through the vivid effect made upon the mother by the rite of circumcision in a neighbour's child—our faith is not childlike enough to accept Dr. Wiltshire's explanation of the "hairy spots." Animals—it is true—have their uses, and, at times, control the destiny of man, or races of men. Rome is said to have been saved by a flock of geese, and the walls of Jericho toppled over to a cajoling flourish of rams' horns; but the apparition of a *black cat*, that favourite disguise of the Evil One, savours too much of mediæval legend and nursery rhyme to be brooked by stern and uncompromising science.

Carcinoma of the Body of the Uterus.—A specimen of this character was presented by Dr. PLAYFAIR, who stated that the uterus was freely movable, and the cervix apparently healthy. The prominent symptoms had been profuse and irregular hemorrhages, alternating with abundant watery discharges of an intense fetor. After death a ragged perforation of the anterior uterine wall was found to have taken place.

Another specimen was exhibited by Dr. PROTHEROE SMITH, in which the cancer invaded the fundus, leaving the cervix intact. A correct diagnosis was made from the intense pain and peculiarly fetid discharges only; for the touch and speculum yielded no evidences of disease.

Dr. PHILLIPS then related the history of a similar case, in which the fundus and both ovaries were implicated, without affecting the cervix. The diagnosis in this case was obscure, and only attained by the use of sponge-tents, for both

the cervix was healthy, and the uterus movable, whilst but little sanguineous or leucorrhœal discharge escaped from the vagina.

We ourselves have met with one of these rare cases, in which the only abnormal symptoms were pain and exhausting metrorrhagia. The uterus was movable and the cervix healthy. After opening up the cervical canal with sponge-tents, the finger came in contact with a small cancerous mass at the fundus. The hemorrhages were checked by repeatedly swabbing out the uterine cavity with Monsel's solution, but the cancer grew rapidly, yet never, however, implicating the cervix, nor protruding into the vagina. After death the fundus uteri and both ovaries were found to be converted into a mass of malignant disease.

Cases of Cancer of the Womb successfully treated by Bromine.—The details of seven such cases, illustrated by four coloured engravings, are given in a paper, by Dr. A. WYNN WILLIAMS. Into the substance of the solid fibroid cancers, he made repeated injections of twenty minims of a solution of twelve minims of bromine to one drachm of alcohol. When the cancer was superficial or epithelial, he applied the same solution by means of cotton in a vulcanite cup. In either method the contiguous healthy parts were protected by cotton-wool saturated with a solution of carbonate of soda. He further employed, thrice daily, a vaginal injection composed of bromine twelve minims, alcohol two drachms, and of distilled water sixteen ounces. This treatment was pursued until the sloughs produced by the stronger applications had healed over. In order that the operator should not breathe the irritating fumes of the bromine, whereby he himself had lost for months the sense of smell, he recommended cotton saturated with a solution of carbonate of soda to be placed in each nostril before manipulating with the bromine.

The discussion, following the reading of this paper, assumed so hostile a tone, that it seems to us very unlikely indeed that Dr. Williams will ever again confide any more cases of cancer-cures to the bosom of the Obstetrical Society of London.

Dr. PLAYFAIR very cavalierly objected: first, that Dr. Williams had not given the slightest proof that his cases were at all of a malignant nature; second, that it was the rarest thing in the world to be able to recognize medullary carcinoma before the "fixature" of the uterus, and Dr. W. had limited his treatment to that stage of supposed cancer, in which the uterus was freely movable.

Dr. PALFREY "not only confirmed the doubt expressed by Dr. Playfair, as to the correctness of a diagnosis" based "upon a limited experience," but he demanded "additional evidence," and "was equally sceptical as to the wisdom of the author's treatment," which, he "would remark in passing," was not original with Dr. Williams, but with Dr. Routh. This, in our opinion, was rather rough language, for quite an unpleasantness is still existing between these two gentlemen, upon the question of priority in this use of the bromine.

Dr. CLEVELAND very artlessly remarked, that the so-called cancers cured by the late Dr. Ashwell were simply cases of chronic congestion, hypertrophy, and induration. But in merely alluding to this fact he of course "*did not desire to institute a comparison between them and those brought forward by Dr. Williams, or in any degree disparage the latter gentleman's researches.*"

Dr. ROGERS had on several occasions resorted to the use of the bromine at the suggestion of Dr. Routh, but, he regretted to say, all his patients had died.

To these attacks Dr. Williams replied by saying that, whether malignant or not, he had at any rate, by the bromine, cured certain conditions of the cervix uteri which had baffled the skill of other physicians, and had resisted all other remedial measures. That surely in the history of cancers there was a time

when they were limited to the uterine neck. With regard to the statement that Dr. Routh was the first to treat these cases with bromine and spirit, he not only emphatically denied it, but also asserted that it was his own suggestion which induced Dr. Routh to resort to these agents.

Ovarian Tumour.—Dr. WILTSHIRE exhibited one specimen, and briefly alluded to the treatment of the pedicle by a long acupressure needle, a plan which Sir James Simpson adopted with success. Dr. Potter showed another, removed after death, which consisted of a monolocular cyst, containing cheesy matter and a few balls of hair.

Dr. L. J. MARTIN, of Melbourne, reported a case of hard fibrous tumour of the ovary, weighing eight pounds, which he had successfully removed. Coupling the absence of the menses with the fact that the tumour was freely movable, and that its movements did not affect the womb, the conclusion was irresistible that it was ovarian and not uterine. The operation was accordingly performed; no adhesions were found; the pedicle was long and narrow, springing from the left side of the uterus.

Both Mr. Spencer Wells and Dr. Graily Hewitt remarked that so rare were fibroid tumours of the ovary, and so frequent were fibroid outgrowths from the uterus, that they were disposed to think that this and other cases of so-called fibroids of the ovary had really a uterine origin.

An instructive case of ovariectomy is next given by Dr. E. M. HODDER, of Toronto. The tumour was nowhere adherent except by its pedicle, which was secured by Mr. Wells' clamp. The wound was closed by five long needles, with intermediate sutures, and covered with lint soaked in a solution of carbolic acid. On the fourth day, the wound having united throughout, the clamp was removed. The patient continued well for forty hours afterwards, when a smoky chimney caused a violent cough, which broke down the adhesions of the pedicle to the lower angle of the wound. From the opening thus made, a knuckle of intestine protruded, and was with difficulty returned. Peritonitis now set in, from which she died on the ninth day after the operation.

In commenting upon this case, Mr. Spencer Wells did not think it bore at all against the use of his clamp, but it did impress the important lesson not to remove this instrument until after eight or ten days, when it is usually ready to fall off.

The last case of ovarian disease is detailed by Dr. V. SABOIA, of Rio Janeiro. The patient had once been tapped, and iodine injections resorted to, no anæsthetic being administered. At the second tapping, chloroform was inhaled, but the patient died a few hours after the operation from syncope following "asphyxia," induced, as the writer believes, from the effects of the chloroform. Upon a careful review of the symptoms, we think that this opinion of the author cannot be sustained, and that the death was more probably due to shock from an unsuspected escape of the iodine injection into the peritoneal cavity.

On Tumours Obstructing Delivery.—Dr. BRAXTON HICKS opens up this subject by the following case. A large fibrous tumour in the anterior wall of the cervix, and occupying the whole upper vagina, was mistaken by the midwife for a breech presentation, and by some medical men for a dilated bladder. After passing the catheter, its true nature being discovered, Dr. Hicks was called in. He attempted version and delivery by the forceps, but failed in both. Cephalotripsy was deemed out of question, on account of the high position of the head. He therefore made an incision into the lower portion of the capsule of the tumour, and without much difficulty enucleated it. No hemorrhage followed; the head came quickly down, and was delivered by the forceps.

In two cases recorded by Dr. EDWARD COPEMAN, labour was impeded by the

presence of a fibroid tumour springing from the sacro-ischiatic ligaments. In both, after immense difficulty, version was effected. After which, in the one, the child was delivered without being perforated, but the tractile force necessary to do this caused the death of mother and child. In the other, "after several hours of hard work and extreme anxiety," the patient was successfully delivered, but not until long after the head was lessened. In both patients the uterus contracted well, so that no blood was lost. To these cases, Dr. C. adds a third published by Mr. Crosse, in which the same method was adopted successfully both to mother and child.

In the discussion provoked by this paper, Dr. GRAILY HEWITT took the ground that the first duty of the accoucheur in these cases is to try and push up the obstructing tumour out of the pelvis, and thus make room for the head to enter. Dr. PLAYFAIR stated that in a paper read by him before the Society in 1867 he showed that the chief danger in labour thus complicated lay in the contusion and pressure to which the tumour was subjected, and which set up a low form of fatal peritonitis. To avoid this risk, the tumour should be lessened by puncture, for even the most solid pelvic tumours have often been found to contain fluid.

Dr. PROTHEROE SMITH recommended that these tumours should first be tested by his exhausting needle trocars, and gave a case in illustration.

Dr. BARNES said that there was no uniform method of treatment in these cases; each must be dealt with according to its individual features. If movable, the tumour should be pushed up; if containing fluid, its bulk should be lessened by tapping. In some cases, the tumour may admit of being removed altogether. Again, to obviate the great danger of crushing the tumour by the passage of the child's head, the physician may be driven to the Cæsarean section. He had recently seen a death from septicæmic fever, caused by such bruising of a fibroid tumour.

Dr. MADGE once tapped such a tumour, and afterwards with great difficulty pushed it above the brim. The patient died in a few days from peritonitis; a result which showed that the operation of puncture must be regarded as one of the elements of danger.

Another case of pelvic tumour is described in a paper by Dr. A. WILTSHIRE. It sprang from the crest of the ilium, and projected into the abdominal cavity, but not into the pelvic basin. During its growth a premature delivery had occurred, but at the succeeding pregnancy the woman went to term and had a natural labour. On the third and fourth days her pulse ran up to 120, and the thermometer showed a temperature of about 103°, but this he regarded as the mere setting in of lactation, for her subsequent convalescence was rapid. At the age of seven weeks, the child died from syphilis inherited from the father; the mother, however, was in exuberant health, and exhibited no trace of this disease.

Dr. MARTIN took the following exception to this paper, viz., that a high temperature, and a quick pulse setting in about the third day, pointed to puerperal fever, rather than to lactation, and mostly depended on offensive lochia, which demanded disinfectant injections. A turgid state of the mammae might cause some degree of fever, but not to the extent described by Dr. Wiltshire.

Dr. ROUTIN's experience led him to believe that these tumours rapidly increased in size, and produced miscarriage about the third or fourth month of gestation, owing to their interference with the due development of the uterus. In regard to the absence of syphilis in the mother, he believed she might have had *uterine syphilis*, which was generally either overlooked, or deemed carcinoma of the cervix. The fact of her showing no secondary symptoms might be due to her

strong health, as it was well known that syphilitic eruptions often did not appear until the patient's constitution had deteriorated. He could not accept Dr. Martyn's explanation of the puerperal disturbances which so commonly occurred on the third day; for, when the lochia gave no indication of smell, he had often seen cases of high fever, which lasted until the milk secretion was fully established.

DRS. EDIS and BALLARD both sustained Dr. Routh in his opinion of the existence of a high grade of milk fever, but the latter thought this could be prevented by allowing sixty hours to elapse before putting the child to the breast. For his experience taught him that the severer forms of this fever are due to the irritation which results from the child's tugging at an empty breast.

On the Management of Childbed with a view to promote successful Suckling.—In a short but useful paper with this title, Dr. WM. MARTYN calls attention to the frequency of a deficient supply of milk in young and vigorous mothers. When the mammæ are well formed, and the woman healthy, there should always be nourishment enough for the infant, unless there are obvious reasons for the contrary—such as advanced age, protracted labour, and great losses of blood. But of all influences disturbing the secretion of milk, the author deems the minor degrees of childbed fever as the most frequent and patent. These minor fevers, so generally met with in primiparæ, are usually associated with offensive lochia, and are then usually followed by loss of the mammary secretion. In these cases, on or before the third day, the patient is feverish, pulse not more, perhaps, than 100; lochia offensive; uterine region sore to the touch; breasts full and tender, but yield no nourishment. This condition is due either to a system exhausted by the effects of labour, to exposed channels or vessels in the uterine cavity, to a vaginal surface torn or bruised, as is likely to be the case in primiparæ, or to the retention, from the position of the patient, of discharges or clots until they decompose. To guard against these sources of contamination: (a.) A firm binder should be applied, so as to favour outflow until the open vessels and raw surface are closed. (b.) The patient should lie on a suitable mattress; be raised up on a vessel to pass her discharges, and at the same time be freely sponged. (c.) Some dilute Condyl's fluid or carbolic acid should be injected night and morning in every primiparous case. (d.) When the discharges become tainted, these disinfectant injections should be used more freely, and a saturated rag be kept in the vagina. Should these directions be carried out, the patient will escape not only these lesser childbed fevers, but also white leg, pelvic inflammations, and those other complications so often met with in the lying-in woman, and which interfere with the mammary secretion. Another source of irritation will be avoided, if, in addition, the child is not put to the breast until there is an abundance of milk. Finally, malt liquors must be taken sparingly, and marital congress avoided, as it promotes activity of the genital organs, and favours menstruation.

True Hydatids of the Uterus.—This rare case is described by Dr. HEWITT, who deems it almost unique. In this, however, he is mistaken, for Rokitsansky's celebrated case is often quoted, and isolated examples have appeared at long intervals in the current medical literature. Quite recently, in a communication to the *Boston Gynecological Journal* of March, 1871, Dr. Hjaltelin states that cases of uterine echinococci are by no means infrequent in Iceland, where, owing to badly cooked food, this disease is endemic. Dr. Hewitt's patient was in the habit of eating pork and veal, and for seven or eight years had noticed a swelling in the abdomen. She was admitted into his hospital after passing large quantities of transparent bladders, varying in size from a grape to a walnut. The uterine cavity was found enlarged, and studded over with globular

masses. Three intra-uterine injections of one drachm of the tincture of the perchloride of iron to three of water, repeated at intervals of two days, removed the unpleasant odour of the discharge, and effected a cure. Upon a microscopic examination, made by an expert, the vesicles discharged proved to be separate from one another. Their envelope showed a very distinct lamellar structure: whilst, in the fluid contained in each cyst, and on the cyst wall, were found minute white bodies with echinococci heads. They also had a rhomboidal shape, and were provided with two circles of hooklets in the centre of the head.

On Two Cases of Twins with Placental Presentation with the Second Child.—Dr. JOHN BRUNTON furnishes these examples, which are interesting from a practical point of view. Great hemorrhage complicated both cases, and in each, after rupturing the membranes and delivering the first child, a placenta was found detached from its original site and occupying the os uteri. The placenta of the first child in each case had evidently been separated during labour, and, by leaving the uterine sinuses exposed, had given rise to the flooding. This experience suggests to us the possibility of a fatal concealed hemorrhage taking place in twin cases, should the placenta of the first child be detached early, and the presenting part of the second child plug up the pelvic canal so accurately as to prevent any external flow.

Placenta retained for Two Months.—This resulted from an abortion at four and a half months. After the expulsion of the fœtus, the placenta, being probably adherent, was sought for, and could not be found. As no hemorrhage took place, the attending physician, Mr. Walker, departed from his usual line of practice, and decided to leave the case to nature. Two months elapsed before the placenta, which was quite undecomposed, came away; meanwhile the patient attended to her household duties, and in every respect was quite well.

The second recorded case of *Retained Placenta* was not so fortunate in its issue. The patient at the end of a seven weeks' gestation aborted with much hemorrhage. For another period of seven weeks she had a constant drain of blood, which culminated in a violent flooding while she was walking the streets. Rest checked this, but for seventeen days thereafter, whenever she exerted herself, the hemorrhage returned. Upon a vaginal examination, made at this stage of the disorder, Mr. George Lowe discovered a body protruding from the os uteri. This was removed, and proved to be placental in character. The hemorrhage at once ceased, but that same night the patient took a chill, followed by sickness, diarrhœa, pain in the head, back, and limbs, and great heat of skin. The pulse became excessively rapid, but there was no abdominal nor uterine pain or tenderness until five days later. On the seventh day she died, probably from pyæmia.

In commenting upon this case, Dr. HEWITT recommended the early removal of the secundines in abortion. He had found their retention to be commonly associated with uterine flexion, which condition both caused the abortion and interfered with its completion.

Dr. PLAYFAIR said that, contrary to the opinion of the author, abortions were less dangerous in the first and second months of pregnancy than in the third or fourth month; for at that early stage the ovum was usually expelled entire; whereas at later periods the membranes were apt to be retained, from the more intimate adhesion of the chorion.

Case of Exhaustion and Convulsions arising from Protracted Labour; Craniotomy; Recovery.—The shocking neglect manifested in the treatment of this case shows how utterly incompetent was the attending physician. After

being in labour for five days the poor woman fell into convulsions, and only then was Mr. J. T. Mitchell called in. He found the os uteri perfectly retracted, and the vagina filled with the prolonged scalp. Even the bladder had been overlooked, and was greatly distended. After passing the catheter, he applied the forceps, but could not make the head budge. He therefore perforated it, and extracted with the cranioclast. The mother fortunately recovered; the child had an enormous hydrocephalic head, and also an extremely large spina bifida of the lumbar vertebræ.

Spina Bifida.—Two examples of this malformation are given by Dr. ROBERTS, which we transcribe only on account of the treatment pursued. In the one, a child aged seven months, a seton of silk was passed through the tumour, which was as large as a pineapple. Next day convulsions set in, and death took place. On opening the sac, it was found full of pus. Intersecting it were eighteen to twenty nerve-filaments, compression of which had doubtless produced the convulsions. The other child presented a tumour as large as a melon; on the day of its birth this was treated by puncture, and afterwards by a worsted seton. The sac rapidly diminished in size, and, at the date of the report, had almost disappeared.

Temperature Variations in the Diseases of Children.—Under this heading appears a very long and important paper by Dr. WM. SQUIRE, who is an authority on the thermometrical investigation of diseases. In it he strives to show: (a.) That the temperature variation of children follows the same rules as that of adults, and is therefore as serviceable for purposes of diagnosis. (b.) That in some of the exanthemata the temperature falls during the rash, but in others it does not. (c.) That a wave of low temperature precedes the development of many of the acute specific diseases, and that thus may be determined the positive incubation of measles, mumps, varicella, vaccination, and whooping-cough. (d.) That quinia checks the advance of tuberculosis in a most marked degree; whilst in scarlet fever, diphtheria, typhoid, and in most of the infantile diseases, it causes sleep, and shortens the period of illness by reducing the high temperature of the evening exacerbation, as shown by the thermometer. (e.) That temperature observations greatly assist the diagnosis, not only by early determining the presence of a serious disease, but also by discriminating diseases from one another. Thus, the mere elevation of temperature is useful as indicating the presence of disease generally, and a sudden rise betokens the existence of some serious exciting cause which calls for a careful exploration; whilst the ataxic form of typhoid, by its high range of heat, can always be distinguished from meningitis, dysentery, or enteritis. In laryngismus stridulus the low temperature will exclude the complication of laryngitis, etc. (f.) That temperature observations are most useful, not so much in showing *what the disease is*, but *how it affects the patient*. We cannot possibly do more than give the faintest outline of the author's conclusions, but must not pass by the following practical suggestions with regard to preventing the spread of scarlet fever: Disinfectants, to be of any value, must start from the bodies of the sick; olive oil, containing one-twentieth part of carbolic acid, should therefore be applied to the skin of the patient. His room should be bared of all unnecessary furniture; a sheet hung over the doorway, and frequently sprinkled with disinfectants. Carpets or rugs must be taken away from the outside of the door, and nothing removed from the room unless previously immersed in water containing a disinfectant. By observing these rules, the author has time and again limited this disease to one child in a family of six or seven.

Air in the Vagina.—We have here a very ingenious paper by Dr. RASCH, who takes note of those cases only in which air is expelled from the vagina,

without any abnormal communication with the intestines. After combating several theories regarding the origin of this curious phenomenon, he remarks that the *modus operandi* of Dr. Marion Sims' speculum, as explained by the inventor, is faulty. For if, in distending the vulvar introitus, air rushes in with a force of fifteen pounds to the square inch, not only would the vagina be torn from its attachments, but the dorsal decubitus would be as efficacious as the semi-prone, since neither position could resist this onset of the air. According to Dr. Rasch's experiments, while a woman lies on her back, no air can rush into the vagina or be expelled from it. If, however, she assumes the lateral or prone position, the gravitation of the abdominal contents and the consequent falling outwards of the abdominal walls create a vacuum which is either abolished by the expansion of the intestinal gases, or, should the vulva be relaxed, by the distension of the vagina with air. In replacing the woman on her side, the abdominal walls and contents fall inwards and expel the air again from the vagina. But, although air may thus enter the vagina, it cannot enter the womb unless distended by the fœtus, hand, or instrument. The practical deductions from these facts are important, for death has been caused by air entering in the uterine veins after labour, or in the uterus after the operation for imperforate hymen. Decomposition of the uterine contents by invading air is a frequent cause of puerperal diseases; whilst air entering into a pelvic abscess through the vagina is fraught with danger. Hence the author recommends that the woman be turned on her back immediately after the birth of the child, and before the delivery of the placenta; that she should have applied a carefully adjusted binder; that all obstetrical operations should be performed with the patient lying in the dorsal decubitus, and that this position be maintained when abscesses communicate with the upper part of the vagina.

Dr. ROUTH was not convinced by the arguments of the author, but maintained that the vagina *per se* could suck up air by a reversed vermicular action of its muscles, as exemplified by the partial spasm of vaginismus. That if the gravitation theory were the correct one, then every cook and char-woman, after scrubbing down floors, etc., should break wind from the vagina upon resuming the erect posture; whereas in truth this unfortunate disorder was monopolized by educated ladies of sedentary habits.

On the Mortality in the Lying-in Ward of the Cincinnati Hospital.—A private letter to the President from Dr. GEO. MENDENHALL, Professor of Obstetrics in the Miami Medical College, is incorporated in these Transactions. In it he states that upon taking charge of the lying-in department, he discovered in the patients a proneness to feverish symptoms, red tongue, diarrhœa, etc., which culminated in attacks of metritis and peritonitis. Out of thirty-seven labour cases occurring between the middle of January and of March, three deaths took place. The building was an entirely new one, three stories high, the ground floor being occupied by surgical, the second by medical, and the third by obstetrical cases. For some time he was at a loss to account for this mortality, but at length discovered that the ventilating openings in the chimney stack, instead of carrying off the foul air of the ward, were bringing up into it the foul air of the surgical ward below. Since the closure of these openings and the construction of several additional windows, seven months have elapsed without a single death, and the convalescences have been uninterrupted. Whilst these puerperal diseases were raging, there were treated in the surgical ward below, seven cases of erysipelas, one of gangrene, five of extensive suppurating ulcers, one of pyæmia, and one of peritonitis following an operation.

Prolapsus Uteri ending Fatally by Dilatation of the Ureters.—This truly remarkable case is carefully reported by Dr. J. S. PHILLIPS, who states that

this complication has not escaped the notice of gynecologists, although of very rare occurrence. Since the connection of the vagina and of the neck of the womb is with that portion of the bladder which includes the orifices of both ureters, it is only surprising that this fatal issue does not more frequently take place. It is evident, he says, that a partially prolapsed uterus, by dragging down the bladder, will form a pouch in which urine may be retained, and lead not only to inflammation of the mucons lining of the entire urinary tract, but also to the formation of calculi. Whilst, in complete procidentia, the trigone of the bladder, as Kiwisch and Virchow have shown, gets compressed under the pubic symphysis by the prolapsed womb, causing thereby obstruction to the inflow of urine into the bladder, and consequent dilatation of the ureters and fatal hydronephrosis. In the vast majority of cases, the immunity of the ureters from any serious organic change is due to the fact, that the vesical and vaginal prolapse takes place in a gradual way, so that the ureters have time to become elongated and adapted to their altered position; whilst in addition not only is there usually a wide pubic arch, but also much laxity of the soft parts, which prevents too firm a compression.

Concluding Report of the Infant Mortality Committee.—It will be in the recollection of our readers, that the last year's abstract of these Transactions contained the first report of this committee. Supplemental information has been obtained from various sources, and suggestions are given for legislative enactments; these we pass by for the following summary of an admirable Code of rules drawn up by the committee and adopted by the council:—

Rules for the Management of Infants. Washing.—Healthy infants should have a warm bath night and morning. After three or four months the heat of the water should be gradually lowered, but it is not advisable to use quite cold water for young children.

Clothing.—This should be light, soft, and warm, and arranged so as not to interfere with the free play of their limbs. All tight bandaging should be avoided. [We think no belly-band whatever is still better.] As children bear cold less well than adults, *every portion* of the body should be warmly clad, with the exception of the head.

Ventilation.—Pure fresh air is of extreme importance to children. Their bed-rooms should be as airy as possible, not over-crowded, and thoroughly ventilated by freely opening the windows.

Sleep.—Unless the weather be very cold, or the child feeble or premature, it should sleep away from its mother or nurse in a cradle or cot. Up to three years of age a mid-day sleep is beneficial. Regularity is of the utmost importance, and the child should be put to bed at stated times. Infants should be put directly into their cot or cradle, and not got into the habit of being nursed to sleep. All soothing syrups, cordials, sleeping drops, etc., should be strictly avoided, except under medical advice.

Air and Exercise.—In fine weather the child should be taken out at least twice a day in winter, and in summer should remain much of the time out of doors.

Feeding.—Regularity is of the utmost importance in this respect; whilst all errors of diet should be most carefully avoided, as causing a large proportion of the illnesses and deaths of childhood.

Suckling.—Breast-milk is the most proper food for infants, and, provided the mother or wet-nurse has plenty of it, nothing else should be given until about the sixth month. No aperient is necessary, as the milk itself, for the first few days, acts as a laxative. Should the secretion of milk be delayed, a little cow's milk, diluted with an equal quantity of water and slightly sweetened, may be given until the mother is ready to nurse. For the first six weeks, the child

should be put to the breast at regular intervals of two hours during the day, and less frequently at night. As the child gets older it does not require to be fed so often, but regular habits as to feeding should be inculcated. It is a great mistake, and bad both for the mother and child, to give the breast whenever the child cries, or to let it be always sucking, particularly at night. This is a common cause of wind, colics, and indigestion.

How a nursing mother or wet-nurse should be fed.—She ought to live generously and well, but not too grossly. She may take porter or ale in moderation with her meals, but it is a common mistake for wet-nurses to live too well, and this often causes deranged digestion in the child. Should a nursing-woman suffer from dizziness, dimness of sight, much palpitation, and shortness of breath, or frequent night-sweats, it is a sign that suckling disagrees with her, and that she should cease to nurse.

Mixed feeding, when the mother has not enough milk.—When there is not a sufficient supply of breast-milk to nourish the child, the best cow's milk, sweetened and diluted with one-third the quantity of warm water, may be given, especially during the night. This plan of combining breast-feeding with bottle-feeding is better than bringing up the child by hand alone.

Weaning.—This should not be done suddenly, but by degrees, and, as a rule, the child should not be allowed to have the breast after the ninth month. After the front teeth are cut, the child should have two meals a day of some light food, such as bread and milk, or nursery biscuits, and these may be gradually increased until the child is weaned. When the child is from seven to ten months old, it may have one meal a day of broth or beef-tea, with crumbs of bread soaked in it, or it may have the yolk of an egg slightly boiled. When a year and a half old, it may have one meal a day of finely minced meat; but even then milk should form a large proportion of its diet. Meat, potatoes, and the food generally of adults, should not be given to children, as they are common causes of diarrhoeas and other troubles.

Hand-feeding.—If this becomes necessary, the chief rule to remember is, that the food should resemble as closely as possible the milk provided by nature. Milk, and milk only, should be used for this purpose: viz. cow's, ass's, or goat's milk—two-thirds pure and fresh milk, with one-third the quantity of hot water added to it, the whole being slightly sweetened. A tablespoonful of lime-water may often be added instead of an equal quantity of the warm water. The milk should be given from a feeding-bottle, and perfect cleanliness of the bottle, tube, cork, and teats should be preserved; indeed, they had better be kept in water when not in use. The child should be fed at regular hours, and never merely to keep it quiet. The milk diet only should, as a rule, be given until the child begins to cut its teeth, when other food may be commenced as recommended under the head of "weaning." When milk disagrees with the child, other food should be given under medical advice. Finally, *most of the mortality from hand-feeding arises from the use of arrow-root, corn-flour, and other unsuitable kinds of food, which consist of starch alone, contain no proper nourishment, and should not be used as substitutes for milk.*

In addition to the matter here presented to our readers, this volume contains a paper on "Fundal Endometritis," by Dr. Routh; one on the "Sulpho-Carbulates in the Treatment of Certain Diseases of Children," by Dr. Sansom; a third on the "Chloral Treatment of Eclampsia," by Baron von Seydewitz; and a case of "Spontaneous Inversion of the Uterus," by Dr. Coward; but we omit them, as they are noticed in the Nos. of this Journal for April and July, 1870, pp. 534, 273, and for January, 1871, p. 282. There is also a contribution from Dr. Robert Barnes on an ingenious suture for closing the uterine

wound in Cæsarean section, and for uniting it to that of the abdominal wall; but we despair of giving an intelligible description of it without the accompanying diagram.

In conclusion, we claim the privilege of a reviewer to take note of some of the shortcomings in this volume. Not only are many of the discussions so slovenly reported that much is left for conjecture, but the proof-reading is quite down at the heels. Out of numerous examples we select the following: On page 267, Dr. Williams, in no very Christian temper, claims the certainly very original discovery of "injecting growths of the wound." On page 369, a refractory foetal head, after being squeezed by a "*cranioclasp*," wisely comes down at once; whilst that very questionable form of the nominative—"pubis"—appears on page 304. Twice does Dr. Routh, on page 301, allude to Dr. Protheroe Smith's case of ovarian cancer, when the case is reported simply as one of cancer of the fundus uteri. At page 366, by the following pointless sentence, Dr. Hicks is carelessly made to "damn with faint praise" Dr. Barnes' suture for closing the uterine wound in the Cæsarean section: "So far as his (Dr. Hicks') case showed, the plan appeared satisfactory, for, although there was *no* severe vomiting, the contents of the uterus were not extruded into the peritoneal cavity." Despite our gentle admonitions of last year, the reporter still spitefully persists in making the Fellows talk of "antiflexions" and antiverted uteri." We hazard an assurance that Dr. Routh's very honest pleasure—and who would not feel such?—at discovering a couple of uteri in one woman (p. 298), will be materially lessened on finding himself twice describing one of them as "antiverted." Finally, by an odd blunder of which no one could be guilty but a confirmed old bachelor, the same reporter on page 399 refers the ingenuous reader, for other kinds of food for infants besides milk, to the article on "*Suckling*," instead of to the one on "Weaning."

W. G.

ART. XXIV.—*Saint Bartholomew's Hospital Reports*. Edited by Dr. ANDREW and Mr. CALLENDER. Vol. VI., 8vo. pp. viii., 180; viii., 57. London: Longmans, Green & Co., 1870.

WHETHER Hospital Reports, like the Sibylline Leaves, are to be considered valuable in an inverse ratio to the amount of matter they contain, is a question which may admit of some debate. Unless the subscribers to the series issued by St. Bartholomew's should decide this question in the affirmative, they will, we fear, find poor consolation from the volume before us, for in quantity it certainly falls far behind any of its predecessors. The hospital statistics, which occupy the last 65 pages of the book, are unquestionably of value, but will not, we suppose, be even looked at, much less read, by more than one of ten into whose hands the volume may fall. Of the 180 pages which are nominally devoted to scientific communications, 4 are occupied by the index, and no less than 20 by a list of the officers and members of the hospital and college, so that the actual amount of reading matter furnished is but 156 pages. This space is divided among 17 papers, on each of which we purpose, in accordance with the custom of this Journal, to offer a few comments.

Article I., *On the Production of Some of the Loose Bodies in Joints*, by JAMES PAGET, F.R.S., is, of course, of interest, as everything must be which proceeds from the pen of its distinguished author. Mr. Paget, from indepen-

dent observation and reflection, confirms the view advanced some fifteen years ago by the late Mr. Teale, of Leeds, that, in some cases at least, the so-called loose cartilages met with in joints are actually fragments of articular cartilage which have been separated by a slow process of exfoliation following an injury.

Art. II., *On a Plan for Reducing Dislocation of the Shoulder*, by GEORGE LOWE, presents no points of special novelty. The "plan" recommended is that which is well known as Mothe's, consisting in pulling the dislocated humerus directly upwards, while the scapula is fixed by the operator's foot placed above the acromion. This proceeding, of which (although fully described by Malgaigne, Hamilton, and other systematic writers) Mr. Lowe seems ingenuously to consider himself the inventor, is illustrated by means of a very indifferent lithographic plate.

Art. III. is entitled "*Notes on the Question of the Unity or Duality of the Poison of Syphilis*," by WILLIAM S. SAVORY, F.R.S. This is a paper of twenty pages, interesting and well written—it is written by Mr. Savory—and yet unsatisfactory, coming, like the last chapter of Rasselas, to a conclusion in which nothing is concluded. We think, but are not quite sure, that Mr. Savory is what is ordinarily called a "*Unitist*;" but he really points out so many difficulties on both sides of the question, that we are somewhat at a loss to know which side, if either, he advocates. Under any circumstances, all can agree in the prevailing sentiment of the article, which might be expressed in the language of that well-known diplomatist Sir Patrick O'Plenipo, that the whole affair "requires a mighty dale of nice consideration." The only idea which strikes us as novel in Mr. Savory's paper is the suggestion that the venereal virus (assuming that there is but one) may vary in activity under different circumstances, just as the venom of certain serpents is more or less deadly according as the animal is more or less vigorous, and just as the medicinal virtues of certain plants vary according to the season at which they are gathered.

Art. IV., *Six Cases of Lithotomy, under Care in the Stamford Infirmary*, by WILLIAM NEWMAN, M.D., Lond., requires no particular comment. One of the patients was an old man, and the five others children. All eventually recovered, though in one case the rectum was wounded, two plastic operations being consequently required, while, in another, urinary infiltration and resulting pelvic cellulitis greatly delayed the cure. Dr. Newman employs the ordinary lateral operation, and advises the introduction of a tube through the perineal wound, even in cases unattended with hemorrhage.

Art. V., *Fractures Injuring Joints*, by GEORGE W. CALLENDER, is a paper of a good deal of interest. *Fractures interfering with pronation and supination* are first considered, and the anatomical relations of the tubercle of the radius to the shaft of the bone described; several wood-cuts are given to illustrate the mode in which the diminished power of supination, common after fractures in the upper part of the radius, is produced. The following are the author's directions for the treatment of the forearm:—

"In the first place, the elbow should be semi-flexed, as the position most comfortable to the patient.

"The forearm and hand (excepting the fingers, which are left free) should be supported between two splints, one on the dorsal, the other on the palmar aspect. These splints should be secured by strips of adhesive plaster before being bandaged. The limb should be accurately fixed in supination, at an angle of 120°, by means of angular pads, which are easily adapted to the ordinary straight splints, being worked by measurement to the proper angle. In this position the thumb is brought nearly into a line with the outer fleshy border of

the supinator radii longus, instead of forming one with the centre of the bend of the elbow, as when the forearm is semiprone, but the forearm is not rotated to the degree of supination recommended by Lonsdale and Malgaigne. The pads should present an even surface towards the broken bones, for practically there is no need for directing pressure over the interosseous space, as the shafts of the radius and ulna keep perfectly well asunder without it. If this plan of treatment is carefully followed, the patient will recover perfect rotation without incurring the risks from angular displacement which are said to follow the treatment by complete supination of the forearm and hand."

Under the heading, "*Injuries to Nerves, Tendons, and Ligaments, complicating Joint Fractures*," Mr. Callender narrates ten interesting cases, which illustrate particularly the effects of nerve injuries in causing persistent pain and altered nutrition after fractures implicating joints. The well-known observations of Drs. Mitchell, Morehouse, and Keen are appropriately referred to by Mr. Callender, who has been able, in several particulars, to verify the accuracy of the conclusions arrived at by those writers.

The next section of this valuable paper is devoted to "*Fractures of the Patella*," and several curious cases of this injury are narrated. "I hope," says Mr. Callender, "the old-fashioned plan of raising the limb on an inclined plane, for treatment of fracture of the patella, is quite obsolete. Fractures of this sesamoid bone are now treated in St. Bartholomew's by rest simply, the limb lying in the horizontal position." The last subject taken up is "*Sprain Fractures*," cases being thus designated "which scarcely receive sufficient attention, and which are very troublesome in their results, cases in which some ligament is torn, carrying with it a film or shell of bone, into which its fibres are inserted." This form of injury, the author tells us, is particularly common in the ankle, and, no doubt, accounts for the tedious convalescence often observed in sprains of that part. The treatment recommended is to "keep the foot at rest at a right angle with the leg, securing this position either by splints or by plaster of Paris bandage."

Art. VI., *On Extraction of Cataract*, by PHILIP CHILWELL DELAGARDE, describes what the author deems a safer, and not less efficient, operation than the ordinary mode of extraction. "I introduced," says Mr. Delagarde, "the knife on a level with the upper margin of the pupil, directing its point downwards. Then I ripped the capsule, by sweeping upwards, until the blade lay right across the chamber. In piercing the cornea on the nasal side, some aqueous humour spurted out—the iris folding on the edge of the knife. Of course, I went on as if nothing had happened. The solid lens rose behind the knife, and was spooned out; the iris was drawn up and cut off. This case did remarkably well." Should any of our readers, with fears of dislocated lenses and escaping vitreous before their eyes, think, from the above description, the procedure recommended to be the rash undertaking of a tyro, we would inform them, on the authority of the author himself, that half a century ago he published "*A Treatise on Cataract*."

Art. VII., *On Masked Epilepsy*, by R. THORNE THORNE, M. B., Lond., gives an interesting account of a case in which an epileptic patient was from time to time affected with impulsive insanity (so-called), being perfectly rational in the intervals.

"I would suggest," says the author, "that in addition to the fact that many cases of so-called impulsive insanity are in reality instances of masked epilepsy, those patients also who are the subject of what is termed recurrent mania, are in all probability, at least sometimes, epileptics, whose attacks are obscured or replaced by an intellectual disturbance, manifesting itself by

maniacal excitement, and often by the exhibition of acts of blind and instinctive violence. In coming to a decision on this point, we shall be aided by the recollection that some of the most characteristic symptoms of masked epilepsy are, the sudden manifestation of furious mania of thought and action, with great irritability, terrifying delusions, hallucinations, and illusions; forgetfulness of what has passed during the paroxysm; increasing feebleness of intellect, and especially of the memory; and the reproduction at tolerably regular or even irregular intervals of the same symptoms; ordinary attacks of epileptic vertigo and convulsion also forming as a rule part of the history of the patient."

Art. VIII., *Observations on a Peculiar Condition of the Bones of Two Insane Patients who had Fractured Ribs*, by EDWARD LATHAM ORMEROD, M. D., Cantab. The author, comparing the bones in question with those of a patient dying from phthisis, found the former dark, wet, and greasy, and unusually advanced in decomposition. On pressing the ribs "dark blood oozed from the comparatively large vessels on their surface, and when forcibly bent they snapped suddenly across with a clean fracture, the edges standing sharp and smooth all round, like a hemlock stalk, without splintering. . . . The diseased rib was . . . much larger than a healthy rib, as if the loss of substance within had been to some extent made up by a deposit of bone on the outer surface. And this view was favoured by the observation of numerous bone-cells, as of growing bone, not yet stretched and withered into lacunæ and canaliculi, lying in the subperiosteal laminae. The centre of the bone was traversed by a very light open network made of the fewest possible slips of osseous tissue. All the strength of the bone lay in its outer shell of compact tissue, which yet was no thicker than card-board." Under the microscope it was observed that "there were minute oil-globules floating all about the field, but, besides, the bone was finely granular, distinctly more so than in specimens of healthy bone prepared in the same way." This granular structure affected no uniform arrangement, but resembled the granular appearance seen at the ossifying edge of cartilage, and in new bone; it was, in the author's opinion, due to an integral change of the substance of the laminae. "The process was essentially one of absorption of the internal structure of the bone; the osseous tissue being replaced by an excessive deposit of the fatty matter normally existing in its interior." Dr. Ormerod's conclusions, he tells us, confirm in all essential particulars those of Mr. Dalrymple and Mr. Durham. The practical point established by this paper is, of course, that the existence of fractured ribs in an insane patient does not necessarily prove that he has been subjected to violence from those around him.

Art. IX., *Medical and Surgical Landmarks*, by LUTHER HOLDEN, forms a sequel to a paper published under the same title by the author in the second volume of the Reports. This paper is manifestly the work of a practised anatomist, and is, we think, well worth the attention of our readers. Mr. Holden considers in succession the landmarks of the abdomen, the perineum, the thigh, the knee, the leg and ankle, the foot, the arm, the forearm, and the hand. In a paper of this kind, accuracy and precision are of the first importance, and we shall not, we therefore hope, be thought hypercritical in indicating one or two points upon which Mr. Holden seems to us to have gone astray. He speaks, for instance, of a "*vertical* incision to relieve the stricture in a femoral hernia" (p. 75), and says: "In performing the operation . . . the incision should be about an inch and a half external to the spine of the pubes. Its direction should be *vertical*" (p. 80); now it is needless for us to say that a *vertical* line is one which is perpendicular to a horizontal plane, and that a *vertical incision*, supposing the patient to be in the position ordinarily chosen for operations, would consist in a stab

which would be as dangerous as it would be useless; obviously what Mr. Holden means is that the direction of the incision should correspond with that of the long axis of the patient's body. Again, on page 86 we find a statement that in adjusting a fracture of the leg, the surgeon should see that the inner edge of the patella, the inner ankle, and the inner side of the great toe are "in the same line;" but, as a matter of fact, these points can never be in the same *line* except in an aggravated case of *pesequinus*. The author evidently means in the same *plane*; but even this is not sufficient, for a plane can always be passed through any three points, no matter what their relative position. The rule which we have followed for a number of years, in the wards of the Episcopal Hospital, is to see that, in a case of broken leg, the side of the ball of the great toe, the inner malleolus, and the *inner condyle of the femur* (which is a more fixed point than the inner edge of the patella), are in the *same vertical plane*; if they are so, provided the limb be not naturally deformed, the surgeon may feel sure that the fragments are in good position.

Art. X., *Observations on the Physiological Action of Apocodeia and of the Hydrochlorate of Cotarnamic Acid*, by J. WICKHAM LEGG, M. D., Lond., would be more interesting to the general reader, had the author thought proper to give some information as to the composition or derivation of the last long-named substance. "The physiological action of apocodeia upon man seems to be feeble; it is extremely improbable that a base which in two-grain doses produces no appreciable effect in health will ever be largely employed in disease, although it is possible that its great bitterness may hereafter prove of service." The hydrochlorate of cotarnamic acid was found to be an active poison, the most striking result of the observations made being the length of time which passed between the hypodermic injection of the substance in question, and the first distinct symptoms of its action. "This was more marked in the dogs than in the other animals; in the first three experiments with the dogs, more than twenty-four hours went by before anything which could be distinctly attributed to the action of this substance was observed. In the guinea-pigs, the lowering of temperature, which occurred some hours before death, was the chief symptom." Dr. Legg suggests that the primary cause of death after the employment of this substance may be "the weakening of the voluntary muscles, of course, including the diaphragm and other muscles of respiration . . . the heart's action remaining unimpaired."

Art. XI., *On the Formation of Aneurisms, and especially Intra-Cranial Aneurisms in Early Life*, by W. S. CHURCH, M. D., Oxon. This is a paper of much interest, based upon the record of four cases of intra-cranial aneurism observed by the author, with others taken from previous writers. Dr. Church attempts to show, and we think with success, that in many instances, at least, the development of intra-cranial aneurism is dependent, not on atheromatous changes in the arterial walls, but upon the occurrence of embolism from the detachment of fibrinous vegetations from the cardiac valves. This sequence of events is particularly observed in young persons, intra-cranial aneurism in adults being less often referable to embolism, and more often to degeneration of the arterial walls.

"It is difficult," says Dr. Church, "to offer any satisfactory explanation of the manner in which aneurism takes place as a sequence of embolism, or why it happens that in some instances occlusion, leading to obliteration of the artery, occurs, and aneurism in others . . . I think it probable that aneurismal dilatation takes place when the blood stream through the artery is obstructed, but not completely stopped, the dilatation consequent on the partial obstruction causing interference in the nutrition of the contiguous

parts, as well as of the walls of the artery itself; the weakened arterial wall yields at the spot where it is least supported by the surrounding tissues, and gradually an aneurism is formed."

Dr. Church does not appear to have met with the valuable paper on intracranial aneurisms published by Dr. Hutchinson, of this city, in the second volume of the *Pennsylvania Hospital Reports*; this we regret, as a study of Dr. Hutchinson's tables would have enabled Dr. Church to enlarge his list of cases occurring in persons under twenty years of age.

Art. XII., *On the Treatment of Wounds*, by HOLMES COOTE, is a short but valuable communication, containing a firm, and, as it strikes us, well-timed protest against the prevailing tendency among surgeons to rely upon *dressings*, and particularly such as are classed as antiseptics. With regard to the employment of chloride of zinc or carbolic acid with a view of preventing suppuration, Mr. Coote justly remarks that "we have yet to learn that suppuration is always or even generally an injurious process It may be asked what harm can possibly result from the use of 'disinfectants' in the treatment of wounds, even supposing the views here expressed are correct. The answer is, that faith in their efficacy soon renders the surgeon more or less callous to the principles of general hygiene." In the author's ward at St. Bartholomew's,

"When a wound is to be closed, a few sutures or strips of plaster may be used as circumstances indicate; over this should be applied a piece of dry lint or water-dressing, and four or five days should elapse, if all goes on well, before any part of the dressing is touched. Should any unpleasant odour arise, it may be corrected by the use of Condy's fluid [a solution of permanganate of potassa]. But so long as the patient looks at ease and can take his food, the best course to adopt is to leave the parts at rest."

Art. XIII. *Case of Multiple Lymphoid Tumours within the Abdominal Cavity*, by PROFESSOR TURNER. The name lymphoid tumour is that which Prof. Turner has adopted, in the recent edition of *Puget's Surgical Pathology*, for the form of morbid growth designated by Virchow as lymphoma. The specimens which are here described were derived from a cadaver in the dissecting-rooms of the University of Edinburgh in 1861. The tumours, which were very numerous and of various sizes, were found in connection with various parts of the peritoneum and in the substance of the liver.

"When the smaller growths were examined microscopically, their structure was found to be very simple. Thin sections displayed closely packed, colourless, nucleated corpuscles, like lymph corpuscles. When teased with needles, and the corpuscles separated from each other, some of the cells were seen to have more of an ovoid form, and a few were even elongated into short spindles. There was no trace of free granular or molecular material. The larger tumours were also composed of roundish and oval cells, the latter of which exhibited a greater tendency, perhaps, to elongation than was seen in the smaller tumours. In the softened portion were numerous minute free particles, having all the characters of finely subdivided oil-globules, such as appear in the course of fatty degeneration. The tumours in the substance of the liver had the same structure as the larger sub-peritoneal growths just described."

With regard to the origin of these curious tumours, which are said to resemble certain growths met with in cattle and termed "*perlsucht*" by the German veterinary pathologists, Prof. Turner remarks that

"It is possible that some or all of the new growths between the layers of the mesentery, and those which had formed near the vertebrae and psoas, had arisen in connection with the lymphatic glands which occur so abundantly in those localities. But the numerous tumours in relation to the peritoneum which lies internal to the fascia transversalis, as well as those of the omentum, could not

have had such a mode of origin, but must have arisen independently in the extra-peritoneal connective tissue. The growths in the liver were probably secondary to those formed in the mesentery and omentum."

Art. XIV., *On an Enormous Cartilaginous Tumour of the Costal Cartilages and Sternum*, by PROFESSOR TURNER. This tumour originated eight years before the patient's death and its first appearance was attributed to a strain of the chest, received in lifting a grain bag from a cart. The growth consisted of two parts, the larger without, and the smaller within the chest: these two divisions being united by a constricted portion which arose from the left side of the first and second bones of the sternum, and the second and part of the third left costal cartilages. The greatest longitudinal circumference of the tumour was thirty-three, and its greatest transverse circumference twenty-five inches. Its weight was twelve pounds avoirdupois. The naked-eye, as well as the microscopic appearances, were those ordinarily observed in cartilaginous tumours, and different parts of the growth exhibited severally evidences of calcareous, of fatty, and of cystic degeneration. Alluding to Virchow's subdivision of cartilaginous tumours into *enchondroses* (growths arising from pre-existing cartilage and due to hyperplasia of cartilage substance), and *enchondromata* (heterologous growths arising in a non-cartilaginous matrix), Professor Turner refers to the tumour under consideration (which, originating in the second costal cartilage, subsequently derived at least a part of its growth from bone or fibrous tissue) as a proof that "although there may be tumours which it is possible sharply to define as *enchondroses* and *enchondromata*, there are others again . . . that, as regards their origin, combine the characters of both the groups into which Virchow has subdivided the cartilaginous tumours."

Art. XV., *Notes on the Surgery of Childhood*, by HOWARD MARSH. Mr. Marsh's "Notes," which though brief are quite interesting, refer to the propriety in some cases of *forcibly straightening the bones in rickety children*, to the *reproduction of the shaft of the femur after the removal of eight inches of bone in the case of a boy nine years old*, and to the *successful removal of a congenital cystic tumour from the face of a child eleven days old*. The cases of rickets in which the author recommends forcible straightening of the limbs (the patient being under the influence of chloroform), are those "in which the tibia is curved forwards, or outwards and forwards, especially if the curvature is acute. . . . The possibility that the bone may snap must always be remembered; but the occurrence seems of little moment, as clinical experience teaches how very readily fractures of rickety bones are repaired." This paper is adorned with a well-executed lithographic plate.

Art. XVI., *Clinical Remarks on Deformities*, by ALFRED WILLETT. This paper, which is intended to be the first of a series, is devoted to the consideration of wryneck and lateral curvature of the spine. Torticollis, except when resulting from disease of the cervical vertebrae, is, according to Mr. Willett's experience, commonly a sequel of acute inflammation of the cervical glands. The muscles concerned in the production of wryneck are usually hard, shrivelled, and ribbon-like, this condition being probably due "to a twofold cause, degeneration of the proper muscular tissue, produced by interference with its normal nutrition during the inflammatory stage, and an induration of the muscular sheath, the product of inflammatory action." The author does not advise tenotomy in these cases, unless deformity persist after the muscles have recovered their natural tone.

Taking up the subject of *lateral curvature*, Mr. Willett, after referring to the fact, now generally recognized, that the axial rotation of the vertebrae in this

disease is an earlier and often more serious condition than the lateral deviation subsequently developed, advances the opinion that, contrary to the commonly received doctrine, both curves (dorsal and lumbar) "begin, advance, and become established together," though, "from the smaller range and less prominent position, the premonitory tendencies to lateral curvature are not detected so early in the lumbar region as in the dorsal." For treatment, hygienic measures, with moderate muscular exercise (with the dumb-bells, etc.), are recommended, mechanical support being only resorted to in confirmed cases. The author condemns all the forms of apparatus in ordinary use, and then proceeds to describe one which he has himself devised: as, however, he does not appear to have as yet employed it in practice, we will not occupy further space with a discussion of its supposed merits.

ART. XVII., *Notes on the Indian Medical Service*, by M. C. FURNELL. Why this paper of eighteen pages was given a place in the *St. Bartholomew's Hospital Reports*, we cannot imagine. It is a sufficiently well-written, gossiping account of the daily life of a medical officer in the Indian service, but has as little bearing upon either the theory or practice of the art of healing as can well be conceived of. Without it, however, the volume would shrink into still slenderer dimensions than at present.

The *Statistical Tables of Patients under Treatment during 1869*, which appear separately paged in the form of an appendix, are unusually elaborate, and extremely valuable for reference. They reflect great credit upon Drs. HENSLEY and HOLLIS, the Medical, and Messrs. MARSH and BLOXAM, the Surgical Registrars.

Surely, with such an ample field for study as is represented by these records, the publication of the "Reports" should not be allowed to come to an end; and yet that such an event is not impossible is shown by the fact that less than one-third of the medical officers of the hospital have taken the trouble to contribute to the pages of the present volume.

J. A., JR.

ART. XXV.—*General Surgical Pathology and Therapeutics. In Fifty Lectures.* By Dr. THEODOR BILLROTH, Professor of Surgery in Vienna. Translated from the fourth German edition, by CHARLES E. HACKLEY, A.M., M.D. pp. 676. New York: D. Appleton & Co., 1871.

This work begins with a protest against the separation of medicine and surgery in a course of study as both unscientific and injurious, in which opinion most scientific physicians of the present day will unite. Either physician or surgeon must know the resources of the sister branch, but the surgeon in addition to all other knowledge must possess the knack of *operating*, in which term all mechanical manipulation is correctly included.

In delineating the course of study to be pursued, prominence is given to the importance of that theoretical knowledge which is absolutely necessary to enable accurate observation, upon the accumulation of which, in surgery, as in other sciences, future progress depends. The remainder of the first lecture, which is introductory, is occupied with an interesting historical review of the progress of surgery, which for the most part is fair and impartial, though the German animus towards France, which has led to such great results since this

book was written, is curiously manifest where the author speaks of the "grande nation," whose influence he considers to be forever eclipsed by German science. While claiming a high place for the surgery of his native country, to that of England is given the palm for its successful efforts to unite to itself all medical knowledge. A thorough acquaintance with the older authors is evidenced, and a list of medical classics given in the space of one lecture which would tend to appal the most determined student of Anglo-Saxon lineage.

In the second lecture, wounds are considered in an interesting though primary manner; it hardly seems necessary to explain what is meant by a flap wound, or to simplify the terms longitudinal and diagonal, which the lecturer, however, devotes some space in attempting to do.

We are surprised to meet with the statement that wounds of bone are especially painful, which is directly contrary to our own experience, as we have always found, that, if the sensitive soft parts are not pressed upon, recent wounds in bone can be handled or probed with impunity. We should hardly have looked for such an assertion from one who is himself an authority on histology, nor to find it based in part upon the almost traditionary accounts of ante-anæsthetic times, by one who is so successful an advocate for the value of exact observation.

The whole subject of surgical hemorrhage is fully and satisfactorily treated in two lectures, though a rather higher opinion of the value of acupressure is expressed than we have been able to entertain. A valuable distinction is drawn between capillary hemorrhage, and that which of late years is termed parenchymatous, such as occurs in the corpus cavernosum, tongue, and spongy bones, and which so often causes trouble and anxiety to the operating surgeon. Transfusion is deservedly commended, and careful, lucid directions are given for the performance of the operation with defibrinated blood, and an ordinary four-ounce syringe.

What seems to us an undue amount of space is devoted to the consideration of sutures, and Billroth shows a decided tendency to adhere to the old silk thread, wherein he is like an increasing majority of the surgeons of the present day.

In the lectures devoted to the consideration of wounds and contusions, due prominence is given to the minute anatomy of the process of healing. The subject is treated clearly and distinctly, but with such succinctness that it is difficult to present an intelligible abstract.

No positive theory of inflammation is laid down by our author, but he follows Henle and Virchow in regarding *fluxion* as due to nervous influence, probably paralytic in its nature, and inclines to the view that the vessels have two sets of nerves, the cerebro-spinal and sympathetic, the action of the latter being controlled by the former; that irritation of the sympathetic causes contraction, and division of its fibres dilatation, of the capillaries; and that the latter effect may also follow irritation of the cerebro-spinal nerves by their obstructive power. In the case of wounds, to the nervous influence there are added mechanical phenomena, which account for some of the symptoms of inflammation. When the capillaries of a part are incised their mouths become occluded by coagulated blood, and the circulation being obstructed through the neighbouring vessels they are necessarily distended, and become in themselves a cause of redness and swelling; with the increased pressure by the same amount of blood upon a smaller number of capillaries their walls become thinned, and a larger amount of fibrinous or gelatinous exudation takes place than is needed for the nourishment of the tissues; the tissue absorbs this exudation and becomes swelled in consequence, and the compression of the inclosed nerve-

filaments by the exudation causes pain. In a very short time large numbers of connective-tissue corpuscles, "wandering cells" of Recklinghausen, make their appearance, and increase in quantity until they displace the intercellular connective-tissue substance which was originally exuded with them, until what is left of the gelatinous exudation becomes fibrous, and is converted into what is known as primary connective tissue, which is always developed from periphery to centre. Billroth considers it most probable that the wandering cells escape from the vascular system by temporary openings in the capillary walls, which are dependent upon the dilated condition of those vessels and the pressure exerted upon them; he is also inclined to look upon the neighbouring lymph-glands as the probable source of the immense numbers of white blood-corpuscles which are thus poured out. The corpuscles gradually become spindle-shaped connective-tissue corpuscles, and the cicatrix ultimately consists of such shaped cells pressed together, with a small amount of intercellular fibrinous exudation. In addition to this course of events, which is typified by the union of connective tissue, when other tissues unite directly, that is, with reproduction of their peculiar elements, we must assume a specific cell action. *Pari passu* the blood clot is absorbed, and vessels are formed in the new tissue, partly by prolongation, principally by interstitial growth of the walls of the capillaries. With the restoration of the circulation the swelling goes down, and in a little while some of the new vessels, which have been present in large numbers, are obliterated by compression and form strings of connective tissue. With the loss of water the cells either become flattened connective-tissue corpuscles or disappear, and it is thought that some of them may return into the lymph—or bloodvessels. Union by granulation is described as a prolongation of the above process in which there is a great excess of wandering cells, which become converted into pus corpuscles; but the cicatrix is ultimately formed in the same manner as in healing by first intention. Billroth holds firmly to the view that cicatrization only proceeds from the periphery, and that when islands of epidermis appear on the surface of an open ulcer, it is proof that a portion of the rete Malpighii has escaped destruction at those points.

Traumatic fever is regarded as the result of blood-poisoning, a condition brought about by the admission into the system of *pyrogenous* substances, while the adjective *phlogogenous* is reserved for those materials which, upon mixture with the blood, may or may not have the power of exciting fever, but are eminently provocative of local inflammation. Both fever-producing and inflammation-producing substances are engendered by decomposition in a wound, and as healthy pus is regarded as having no injurious influence where not pent up, nor allowed to undergo putrefactive changes, the open treatment of wounds is vigorously advocated. No mention is made of the antiseptic method of Lister, which has taken a fresh start abroad, and seems to need a series of careful, impartial observations to enable us to decide upon its value.

While the formation of new muscle is admitted, the conversion of wandering into muscle cells is doubted. The union of nerves in the human subject is regarded as proved to a limited extent by the experiments of Schiff and Hjelte, but for its accomplishment very accurate apposition of the severed ends is required.

The organization of a thrombus is next carefully described as proceeding as follows: First, red cells are present with increased numbers of white corpuscles and filamentous fibrin; at a later period, as six days, the red cells have almost disappeared, the fibrin is more homogeneous, and numbers of spindle-shaped cells are present, some of which are united to the folded internal coat of the vessel, which last ultimately becomes unfolded, and the cells are arranged in

striae as connective tissue, finally vessels are formed in the clot which communicate partly with the calibre of the occluded vessel and partly with its vasa vasorum.

Traumatic aneurism is treated of under the head of punctured wounds, and in the course of his remarks upon those cases where both artery and vein are involved, our lecturer congratulates his class that only two of the varieties have names, in which congratulation we most heartily join, as in the whole range of surgical nomenclature aneurismal varix and varicose aneurism have been to us the most perplexing titles. We are pleased to see the last-named variety illustrated by one of Froriep's plates, taken from the surgery of Dorsey, so dear to the heart of the old Philadelphia practitioner. Ligature of the vessel, at the point of injury, or in its continuity, is insisted upon as the only reliable treatment in secondary hemorrhage, and time spent in the trial of various styptics, when a large vessel is known to be injured, is very properly regarded as wasted.

Considerable space is devoted to the indications for the use of the water bath in contused wounds, which is so favourite a method of treatment with German surgeons, and the use of poultices is condemned as a relic of the dark ages. Though we have always known the objections urged against poultices, yet a somewhat extended experience in their use has convinced us of their practical value, so that in many cases we would be sorry to be without them, and having vainly sought for their equivalent in some more cleanly and less mediæval form, we are satisfied to remain among that class whose surgical practice involves the use of a large bulk of flaxseed and other emollients.

In the lecture on fractures and their repair, in proceeding to describe the latter process, Billroth states, as the result of his own observations, that in a very short time inflammatory exudation, containing those great travellers, the wandering cells, infiltrates the medulla, Haversian canals, and periosteum with the adjoining muscles and tendons. The canals of Havers become dilated through the absorption of their walls by some unknown process, while in the medulla the fat cells are simply replaced by wandering corpuscles, and the whole neoplastic infiltration becomes ossified instead of being converted into connective tissue as would be the case in a wound of the soft parts, though this is sometimes accomplished through the medium of cartilage, as in the case of children, yet in the majority of adult cases it occurs directly. The old periosteum is used up or disappears in the general inflammatory exudation, and a new one is formed from the connective tissue. As will be seen, the exclusive function of the periosteum in the formation of new bone is entirely denied, and in proof of this denial the argument is adduced, that, though where the tendons are directly attached to the bone there is no periosteum, there is no lack of power in the accomplishment of bony repair at those points. How this view comports with the experiments of Ollier, upon transplantation of the periosteum, is a nut for the experimental histologists to crack.

For the treatment of fractures in general immovable dressings are emphatically advised, though he recommends the addition of other mechanical supports to the plaster bandages, whereby he deprives his method of that simplicity which is one of its greatest advantages. For ourselves, we cannot help regarding the inability to inspect the seat of fracture as a great objection to the use of plaster moulds, at least early in the treatment; nor are we able in a given case to prognosticate what amount of pressure can be safely borne, and to be obliged to shift a permanent dressing destroys whatever efficacy it may possess. The nomenclature adopted is much inferior to that in use among English and American surgeons. What we know as compound, are spoken of as complicated

fractures; in their treatment fenestrated plastic bandages are strongly recommended, and with more reason than in the case of simple fractures as the importance of perfect quietude is greater. Great caution is insisted upon in the probing and examination of the parts, and the practice of inconsiderately removing sharp ends of bone is properly reprehended as conducive to the most disastrous results.

Pseudarthrosis and union with deformity are considered in a short lecture as an appendix to the chapter on fractures, and for the treatment of false-joint preference is given to the least severe operations. For the remedying of oblique union the alternatives endorsed by Professor Billroth are simple bending, either with the hands or by the aid of a machine (which definitive nomenclature, with a howl of triumph, terms "*dysmorphosteopalinklastes*"), the operation by subcutaneous osteotomy of Langenbeck, or the wedge-shaped excision of the late Dr. J. Rhea Barton, of Philadelphia.

In a rather pictorial chapter on the duties and position of the army surgeon, our author falls into a little error of Prussian history when he speaks of "the long grenadiers of Frederick the Great," whereas all the accounts of that eminent soldier with which we are acquainted tell us that as soon as he came to the throne he ceased to foster that famous regiment, for the maintenance of which his father, Frederick William, had ransacked the civilized world.

Burns are treated of in three classes, namely, as simple hyperæmia, hyperæmia with formation of vesicles, and hyperæmia with the formation of eschars, and this comparatively simple classification seems to us very preferable to the artificial, though time-honoured degrees of Dupuytren.

In speaking of the treatment of carbuncles no mention is made of that recently recommended, which we have found satisfactory in our own practice, which consists in simply compressing the swelling from the circumference to the centre by adhesive straps tightly drawn. For cases of carbuncle of the face a very gloomy prognosis is given.

While the remarks upon tetanus and delirium tremens are particularly meagre and bald, the chapter upon pyæmia is most valuable and full, but having yet much before us we will not pause for its consideration.

Chronic inflammation and constitutional depravities are treated of in two chapters, and an unfaltering adhesion is given to the views of Buhl, that miliary, *i. e.*, the only true tubercle, results from the absorption of the caseous remains of old inflammations. A very short sketch of syphilis is given, and it shows that our author leans to the side of the anti-mercenialists.

Chronic inflammations of bone and periosteum with necrosis are discussed with great perspicuity in five lectures, embraced in one chapter of fifty pages, but the subject consists so much of minute details, illustrated by diagrams, that adequate analysis is impossible. The subject is one demanding careful study, and nowhere is the student likely to meet with clearer views or more instruction than in the pages of the book before us. Billroth's arguments are generally convincing and logically lead to his conclusions, and while differing widely from the views of Ollier upon the function of the periosteum, the largest credit is given to the persevering zeal of that eminent surgeon.

Of what is said upon diseases of the joints, we shall only notice the subject of resections, which is treated under the head of fungous synovitis, and the performance of the operation advised for all the joints of the extremities, excepting those of the knee and ankle. The exception of the knee-joint places him in opposition to the views of many authorities in this country and Great Britain; but as there is no subject in the whole range of surgery which has been and is yet exciting more attention, we must consider the matter as

still unsettled, and wait for that matured experience which time will bring with it. We cannot, however, avoid saying that Billroth appears to us to be opposed by the weight of modern testimony and experience. It is curious to observe him put in a special plea for excision of the wrist, which of all the joints is the one where the propriety of the operation is called in question by Fergusson and other advocates of resection.

Deformities from all causes are treated of in the next chapter, and the succeeding one is occupied with the consideration of varices and aneurism; both are good, and will well repay perusal, though containing nothing calling for special notice on our part, and we pass at once to the remaining chapter.

Cohnheim's discovery, that the wandering cells of Reeklinghausen are but the colourless corpuscles of the blood, and the demonstration of their passage through the walls of the vessels have revolutionized much of our pathology, and the effects have been evident in every chapter of the book before us, but in none are they more conspicuous than in this concluding one, which is occupied with the consideration of tumours.

Virchow's classification is held to be defective, like all those which preceded it, it being contended that the terms homologous and heterologous cannot be applied in all cases of new growths, as in the instance of tumours composed of developing tissue elements. According to Virchow's definition of these terms,

"inflammatory, new formation, is at first heterologous everywhere; but the connective-tissue cicatrix developing from it, subsequently becomes a homologous neoplasia in connective tissue; in muscle it almost always remains heterologous, the same way in the brain, and in bones, if it does not ossify. You see that here parts that from their nature and mode of origin naturally belong together, are sundered by the anatomical nomenclature." "Every tumour resulting from indifferent formative cells must exhibit a series of stages of development, if the cells are transformed to one or several sorts of tissue. Wherever they are grouped together, indifferent formative cells are heterologous; if a neoplasia show only such elements, we will let it pass for heterologous; but if it appear that a number of these cells have been transformed into spindle-cells, the question arises, where does this neoplasia belong? Spindle-cells collected in groups are heteroplastic in all parts of the body; but these cells occur in foetal connective tissue, foetal muscles, and foetal nerves; what would finally become of the spindle-cells of this tumour? if found in muscles, should not this tumour still be called homologous? On this point we can only decide arbitrarily; you may look at it from different points of view. Now, what shall we do with tumours that contain the most different complete and incomplete tissues?"

Though, as will be seen, he objects, yet he tells us that he has abandoned his former attempts to classify tumours upon a clinical basis as impracticable at present, and follows the classification of Rokitsansky and Virchow.

According to Remak, His, and others, cells derived from different germ layers, in their development cannot pass out of that class of tissues of which the three foetal layers are the respective progenitors, so that the so-called indifferent cells which are seen in the early development of tumours are not really indifferent, but belong to a settled class, and will certainly form tissues of a corresponding type. Probably wandering cells escaped from the bloodvessels take an active part in the formation of some new growths, though the specific action of the tissues of the part is not excluded, and as these wandering cells in all probability are descended from the middle germ layer, which naturally forms connective substance, muscle, vascular system, lymph-glands, spleen, and peripheral nerves, they can only develop similar growths, and in this way the formation of some composite tumours may be accounted for.

Tumours may grow from the centre or from the periphery; if by the former method, the surrounding tissues are displaced, by the latter they are destroyed; or we may have both methods of development present in the same tumour. Neoplastic formation is subject to the same influences as normal tissue, and may suffer from inflammation with all its effects, or the tissue of which it is originally composed may even undergo morphological change.

It is very difficult to draw the line between the etiology of inflammation and of tumours, yet "we may say of tumours that they do not bear in themselves the conditions for a typical termination, as do the inflammatory neoplasiae." Billroth thinks that we must admit the existence of specific reaction in the tissue of a part, even if ordinary irritation has first brought that action into activity, and that it is as easy to believe in a constitutional predisposition to tumours as to gout; and by this opinion, after a criticism of Virchow's views, he is willing to abide. He frankly admits that the whole subject is largely based upon hypothesis and is not practical, but defends his consideration of the subject, at some length, upon the plea of the natural and justifiable desire of the mind to inquire into the ultimate causes of things.

Here we must leave our author. In the remaining pages of the volume, one hundred in number, the minute anatomy of tumours, with upwards of fifty illustrative wood-cuts, and some concise remarks upon diagnosis and treatment are included. Of so condensed a chapter we shall not attempt an analysis. An early operation is strongly recommended in cases of cancer where practicable, and the hope is expressed that with the advance of science and the dissemination of a sounder pathology, family physicians may be led to advise earlier interference, when we may look for more favourable statistics than have been hitherto collected.

Throughout the work there is manifested some lack of confidence in therapeutics. Among new instruments, the *écraseur* and galvano-caustic apparatus are regarded with favour, though the bulk and expense of the last-named are objected to.

In one place we are told that the patient departed two hours after amputation at the hip, which we must say surprised us not a little; but when we sought to gratify our curiosity by a close examination of the details, we found that it was intended to inform us that he died, which is not nearly so surprising, and we perceived that it was merely an instance of that ambiguity which declines to call a spade by its simplest title.

The translator appears to have done his work well, and is evidently desirous that Dr. Billroth shall be allowed to speak for himself without the incumbrance of a commentator, as he has only added a few short and modest notes. The book is well printed, and contains one hundred and fifty-two creditable wood-cuts.

In conclusion, we may say that, though open to criticism, as all books are, the volume we now close contains perhaps more valuable matter connected with the theory of surgery than any other that has appeared in our language since the issue of Paget's great work. While we congratulate Dr. Hackley upon his attempt to introduce Professor Billroth's work to American readers, we would strongly urge its perusal by all who wish to be informed upon the subjects of which it treats.

S. A.

ART. XXVI.—*The Rapid Cure of Aneurism by Pressure, illustrated by the Case of Mark Wilson, who was Cured of Aneurism of the Abdominal Aorta in the Year 1864.* By WILLIAM MURRAY, M.D., M.R.C.P. Lond., Lecturer on Physiology in the University of Durham, etc. Crown 8vo., pp. 43. London: J. & A. Churchill, 1871.

THE case of Mark Wilson (which we doubt not will hereafter figure in the annals of surgery quite as prominently as that of the porter on whom Sir Astley Cooper performed his celebrated operation of tying the aorta) was published in the *Transactions of the Royal Medico-Chirurgical Society* for 1864, and quoted in the number of this Journal for July, 1865, p. 164. For six years subsequent to his recovery, as then recorded, Dr. Murray's patient enjoyed good health, though engaging in laborious occupations, and being occasionally subjected to a good deal of privation. In the early part of the year 1870, "the patient was compelled to resume his old occupation as a paviour, and the strenuous efforts required of him, once more brought on violent pain in the epigastrium, which was speedily followed by other symptoms of an aneurism in that region." In fact, a second aneurism was developed above the point at which the artery had been occluded in the case of the first, and, this time, the disease was situated at so high a point as to render proximal compression utterly impracticable. The patient died suddenly, on June 1st, 1870, and the careful *post-mortem* examination, the results of which are now published, confirmed, in the most satisfactory manner, Dr. Murray's diagnosis as to the position of the first aneurism.

Apart from the very great clinical interest of this case, to which we shall presently refer, it is of much value to the pathologist as showing very clearly the means adopted by nature to carry on the circulation, after the occlusion of the largest artery in the body. Two good wood-cuts illustrate the *post-mortem* record, and show that the collateral circulation was established *externally* by the inoculation of branches of the internal mammary and deep epigastric arteries, and by anastomoses of the hepatic artery with a branch of the epigastric, and of the intercostal arteries with the deep and superficial epigastric and with the superficial circumflex iliac, while *internally* it was maintained by the junction of branches of the superior and inferior mesenteric arteries, and of the lumbar with the ilio-lumbar and circumflex ilii arteries.

The chief point of clinical importance in this remarkable case is, of course, that it conclusively establishes the curability, by surgical means, of aneurisms of the abdominal aorta. Dr. Murray's little volume is, however, also of interest as furnishing a valuable addition to our means of estimating the comparative merits, in the treatment of aneurism in general, of the "Rapid Method" of employing pressure, and of that ordinarily resorted to. In the latter method, as in the Hunterian operation by ligature, and in that of Wardrop, it is well known that the surgeon's object is to induce the *gradual formation* in the aneurismal sac of a *laminated coagulum*; but in the "rapid method," by which the circulation through the sac is *completely arrested*—as in Anel's and Brador's operations—the blood in the aneurism undergoes coagulation *en masse*, a process which is not inaptly compared by Dr. Murray "to those instances of crystallization which occur when the slightest disturbance of the conditions of solution determines the immediate solidification of dissolved matter."

That the "rapid method" is practicable, and in many cases efficient, there can be no doubt; but that it is as *safe* as the common mode of making com-

pression (as asserted by Dr. Murray), is, we think, at least not proved. Indeed, the "gradual method"—as it may be called for the sake of distinction—can only do harm indirectly by delaying the adoption of more certain modes of treatment, while the "rapid method," or any other plan which aims to effect coagulation *en masse*, necessarily exposes the patient to some risk of suppuration occurring in the sac, and, as a possible consequence, of secondary hemorrhage; the fact that such results have not ensued in any of the nine or ten cases referred to by the author, merely proves that the accidents in question are not inevitable.

Hence, while we would not for a moment be supposed to undervalue the mode of treatment introduced by Dr. Murray—a mode of treatment which for cases of aneurism of the aorta or of the primitive iliac is really invaluable—we are not prepared to admit that it should supersede, in ordinary cases, either the ligature or the pressure treatment as commonly applied.

We observe that, in referring to Dr. Heath's cases of aneurism treated by the "rapid method," Dr. Murray (page 33) says—(his language at least conveys this impression)—that Dr. Heath used chloroform in both cases, effecting a cure in one by keeping up pressure for twenty minutes. This account does not agree with that quoted in the New Sydenham Society's Biennial Retrospect for 1867-1868 (page 293), from Dr. Murray's own paper, read before the Surgical Section of the British Medical Association, at the meeting of 1867: it is there stated that the final and successful effort of twenty minutes was made "*without chloroform.*" We refer to this discrepancy, not with any intention of fault-finding, but with the hope of eliciting from either Dr. Murray or Dr. Heath a definitive statement as to whether chloroform was or was not used in the case in question, and as to whether the aneurism was really of the aorta, or of some smaller vessel; the former would be inferred from the record in the *Biennial Retrospect*, but the locality of the aneurism is not alluded to in Dr. Murray's volume.

J. A., JR.

ART. XXVII.—*Notes and Recollections of an Ambulance Surgeon; being an Account of Work done under the Red Cross during the Campaign of 1870.* By WILLIAM MACCORMAC, F.R.C.S., M.A., M.R.I.A., Assistant Surgeon to St. Thomas' Hospital; Consulting Surgeon to the General Hospital, Belfast; and Member of Senate of the Queen's University. 8vo., pp. xii., 155. London: J. & A. Churchill, 1871.

THE work before us is a reprint of a series of communications which have already appeared in the *British Medical Journal*. In his preface, the author tells us that he does not attempt to give a systematic account of gunshot injuries, but merely furnishes the record of his own experiences as a volunteer surgeon during a portion of the late Franco-Prussian war. These experiences, pleasantly related, form a most readable narrative, and seem to us to delineate in a faithful manner the difficulties which beset the civil surgeon when transferred to the arena of actual conflict.

Immediately after the declaration of war, Dr. MacCormac left England for Paris, and tendered his professional services to the medical authorities of the French government. After a few days' delay, he was instructed to proceed to Metz, there to report to Dr. Isnard, the French Surgeon-in-Chief. Arriving at Metz on the 10th of August, he found there heavy bodies of French

troops, massed under Marshal Bazaine. A large temporary pavilion hospital was in process of construction, immediately outside of the walls of the fortress. This hospital, each pavilion containing fifty beds, was designed to accommodate two thousand patients, and was erected, we are told, in "triangular fashion," on the plan of "the general hospital at Lincoln, United States"? We presume the Lincoln hospital at Washington is referred to. Three thousand additional beds were also arranged in different civil and military organizations within the city. An aggregate of five thousand beds was thus reached, an accommodation which strikes us as one altogether insufficient to receive the sick and wounded, necessarily accruing from the active operations of Marshal Bazaine's corps, which our author tells us was not less than one hundred and thirty thousand men. Twenty thousand beds in hospital would not have been too many, as subsequent experience sadly demonstrated.

The military restrictions enforced upon all foreigners at Metz appear to have been very stringent; so much so, indeed, as to preclude their remaining. Every stranger was suspected as a Prussian spy; and, as our author writes,

"The mental effect produced on one by the exaggerated dread of spies on the part of the French was most unpleasant, nay, demoralizing. In spite of yourself you experienced a sort of guilty air. You felt as if, at each moment, some one might demand fresh explanations; and you became afraid to address or look at anybody. The vaguest suspicion is considered tantamount to proof that you are in the service of the enemy; and a mistake, once made, may be difficult afterwards to remedy. The only consolation I received was when I subsequently learnt that the *Prévôt-Maréchal* himself had been arrested by one of his own gendarmes, and brought in triumph to the prefecture as a spy."

In commenting upon the earlier operations of the campaign, Dr. MacCormac bears this tribute to French valour:—

"Intimate relations with the French, during some three months of the war, have served to convince me that the French are very brave. Everything that has since happened only tends further to establish this opinion. But when men are neither officered nor fed, but led half starving to the shambles, it is hard for them to win. The management and incompetence, coupled with downright ignorance, which prevailed in high places in the French army, were something extraordinary."

From Metz, Dr. MacCormac went to Paris, and there became associated with our countryman, Dr. Marion Sims, in the management of the Anglo-American Ambulance. The story of the operations of this ambulance, or surgical commission, occupies the remainder of the volume; and, as its history is doubtless a matter of interest to Americans, we extract from the report of Dr. Sims, as furnished by Dr. MacCormac, a sketch of its origin and early doings:—

"The Anglo-American Ambulance has a little history of its own. The Americans in Paris appointed a committee at the beginning of the war to organize an ambulance. This committee invited me to select a staff of American surgeons for this purpose. I accepted the invitation, and organized the staff. When we reported ourselves ready to go forward to the seat of war, the committee suggested that we should set up our tents in Paris, and await the coming of the Prussians. The surgeons unanimously opposed this proposition, insisting that our organization was for the purpose of giving aid and succour to the sick and wounded on or near the field of battle. The committee was obstinate, the surgeons were no less determined. Hence arose a split, and the American surgeons dissolved their relations with the American committee, and formed a union with Dr. MacCormac, Dr. Frank, Dr. Webb, and other English friends, under the title of the Anglo-American Ambulance. We then went to the French *Société de Secours aux Blessés*, in the *Champs Elysées*, where our services were at once accepted. The English surgeons had £2000 sterling,

and a lot of stores. The French gave us 15,000 francs, horses, wagons, tents, and indeed everything we asked for. Both parties promised us all the money and all the stores we might need for the future. The French gave us 7000 francs more at Sedan, and they have furnished us with rations ever since we entered the service, and will continue to give us money and rations. You know how generous and opportune has been the assistance from your side.

"Our organization was completely French, but composed only of English and Americans. We studiously, and I can now say wisely, excluded all other nationalities. We were half-and-half, eight Englishmen and eight Americans.

"The English are: Dr. William MacCormac, Dr. Frank, Dr. Webb, Dr. Blewitt, Dr. Wyman, Mr. Hewitt, Mr. Scott, Mr. Ryan.

"The Americans are: Dr. Marion Sims, Dr. Pratt, Dr. May, Dr. Tilghman, Dr. Nicoll, Mr. Hayden, Mr. Wallis, Mr. Harry Sims.

"I was made Surgeon-in-Chief, and Dr. MacCormac was placed next in command. Dr. Webb was *comptable*, which includes the functions of Commissary and Paymaster. Thus organized, we left Paris on Sunday night, the 28th August, with orders to report at Mézières. We arrived there on Monday night, and on Tuesday, the 30th, we came to Sedan, where we found the Caserne d'Asfeld already converted into a hospital, which the authorities gladly turned over to our use, and we took possession of it on the 31st. We had hardly entered its grounds when the roar of cannon announced the battle of that date. At night, most of us repaired to the battle-field. Many of the wounded were transported to our hospital at Sedan, but many more, too severely wounded to be transported, were housed in the village of Balan. Several urgent operations were performed that night by MacCormac and Frank.

"Besides those sent to the hospital at Sedan, and those attended by MacCormac and Frank, our staff visited and ministered to the wants of more than a hundred others. Drs. Frank and Blewitt remained all night at Balan, the others returning at midnight to Sedan. Early next morning, the 1st September, began the great battle of Sedan. Dr. Frank's hospital was in the midst of it at Balan, and he was busy all day receiving and dressing the wounded that fell in sight of his door. The house that he occupied, the Mairie, bears the marks of many bullets, and he was at one time, for self-preservation, compelled to lie down by the side of his wounded and dying. Dr. Frank being thus accidentally, or I should rather say providentially separated from us, established a branch of the Anglo-American Ambulance at Balan, while we remained at Sedan."

The account of the Anglo-American Ambulance, subsequent to the departure of Dr. Sims, is continued by Dr. MacCormac, and, did space permit, we would willingly follow its honourable career. But this the limits of our article forbid; we can but refer to a few of its more salient points. At page 26, Dr. MacCormac discusses the French voluntary ambulance corps. This he pronounces as monstrously cumbersome, and indeed inefficient—too many surgeons; too many inexperienced dressers, and above all wagons so heavy and clumsy as to be incapable of transportation. Some months since, in an article¹ upon the European ambulance system, we took occasion to condemn many of the most vaunted wagons, predicting their failure in a heavy country. Our remarks at that time have been verified by the events before Sedan; for our author tells us, that "the wagons would often stick fast in some country by-road, or a field, and then they would have to be abandoned." At Sedan, on August 31, the Anglo-American Ambulance was placed in possession of a hospital of 384 beds; and our author, with reason, congratulates his colleagues on their exceptional good fortune in being able to secure and arrange in working order so excellent a hospital on the eve of a great battle. The hospital building, originally a caserne or infantry barrack, was situated on the town ramparts, about seventy feet above the level of the Meuse. It was two stories in height,

¹ American Journ. of the Med. Sciences, 1869, N. S., vol. lviii. p. 205.

and two hundred and forty feet in length; containing nine large rooms and four smaller ones on each floor. The wards were ventilated by large windows at each end, and communicated by doors at the middle of each side.

As soon as the ambulance was established, patients began to flock to it. How numerous these were our readers may judge, when we are told that the French wounded alone before Sedan, exclusive of dead, were 12,500. One great difficulty at the time was to prevent the hospital from being overrun, and the selection of proper patients for its beds demanded, as it always does after great battles, considerable firmness and decision on the part of the examining officers.

Many pages are devoted by the author to the description of special wounds, some of them of great interest. Among others, three cases of hip-joint amputation are reported, all of whom died, one upon the second and one upon the fourth day. In the latter Dr. MacCormac twisted the femoral artery, and there was no after-hemorrhage. The author adds that this was probably the largest arterial trunk to which torsion had ever been applied. At page 114 is reported a case of ligature by a silver wire of the third portion of the subclavian artery, at the hands of Drs. MacCormac and Sims, after the method of Le Vert¹ and Stone² of this country. The patient died of pyæmia on the tenth day. On *post-mortem* examination, the second portion of the artery was found to be occluded by a large, firm clot; but scarcely any existed in the distal portion.

In addition to the central Anglo-American hospital at Sedan, branch hospitals were established under its administration at the villages of Balan and Bazeilles, a few miles distant, and at these centres of conflict the members of the commission worked faithfully and to good effect. At page 116 the distribution of the French wounded by the German military authorities is explained. The slightly injured, those able to serve again in a month, were sent to Germany as ordinary prisoners of war. Those, however, who, although badly wounded and capable of transportation, would be unable to rejoin their ranks three months, were suffered to return to their French homes without conditions. The German system of "Evacuations," by which the wounded were rapidly conveyed to towns in the rear, and the active armies thus disencumbered, is highly praised. At the same time, the proportionate augmentation of individual hardship and suffering is pointed out and justly commented upon. The experiences of our own great war have, we think, conclusively shown that when, under proper hygienic and hospital conditions, the wounded can be cared for in proximity to the battle-field, vastly better surgical results may be expected than when they are submitted to prolonged and painful transportation.

At page 62, Dr. MacCormac describes his visit to the ghastly fields around Sedan, and we recognize in every line the horrors of such a scene which we know must be familiar to many of our readers—a battle-field dotted with dead, reeking with foul odours, and surrounded on all sides by ruin and desolation. The attitude of the dead attracted Dr. MacCormac's attention, in some instances they having preserved the last attitude of life, with upraised arms, and gun grasped as if about to fire. The writer of this notice has, in a previous number of this Journal,³ drawn attention to this curious phenomenon of instantaneous cadaveric rigor, often observed in sudden and violent deaths.

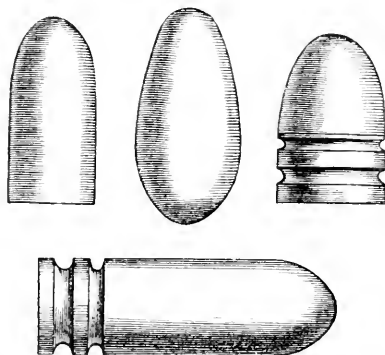
At page 137 we are presented with a sketch of the French, Prussian, and Bavarian bullet, as well as the bullet of the mitrailleuse. The weight of the

¹ The American Journal of the Medical Sciences, 1829, vol. iv. p. 17.

² Ibid., 1859, N. S., vol. xxxviii. p. 570.

³ On instantaneous rigor, the occasional accompaniment of sudden and violent death. American Journal of the Medical Sciences, January, 1870, p. 87.

first two is respectively 380 and 530 grains; that of the Bavarian bullet is 434 grains, and that of the ball of the mitrailleuse is one and three-quarter ounces. This sketch of these novel and destructive projectiles we subjoin.



Chassepot, Needle-gun, Bavarian, and Mitrailleuse bullets of natural form and size.

At page 132, Dr. MacCormac thus speaks of the wounded of the two armies:—

“I have been repeatedly asked whether I had noticed any difference in the manner in which the French and Germans bore suffering and pain, and recovered after injury. I can only record my own impressions, derived from what I saw, when I state that I failed to observe any marked difference. Differences there may have been; but what struck me most was the resignation, both amongst officers and men, to their too often sad fate. I met with no repining, no fretfulness. * * * Flesh and blood have pretty much the same attributes of flesh and blood, no matter on which side of the Rhine they may have been developed. And, apart from individual characteristics, I could really detect no difference between the way in which a German or a French wounded soldier, each of whom say had sustained an injury of like severity, comported himself while under treatment.”

After the removal of the wounded from Sedan, the work of the ambulance as an Anglo-American organization ceased, and its members separated, some to their homes, and others to further work at Epernay, Metz, Orleans, and among the famishing troops of Bourbaki in Switzerland.

And here Dr. MacCormac's book comes to an end. We wish that there had been more of it, for it is a well-written record of a personal experience, and it is just such experiences that, in the aggregate, make up the surgical history of a great campaign. We are quite sure that the commission over which he for a time so ably presided was successful in its humane mission, and we feel that he does not claim too much when he says that the Anglo-American ambulance “accomplished much genuine good; that it has brought aid and succour in the hour of great distress, when such aid would otherwise have been wholly wanting; and I for one shall look back, as I believe also can do every other member of the ambulance, not only with unalloyed pleasure, but also a little pardonable pride, to the humane career of the Anglo-American ambulance.”

J. H. B.

ART. XXVIII.—*What We Observed during a Visit to the Seat of War in 1870.*

By CHARLES ORTON, L.R.C.P. Edin., Medical Officer to the North Staffordshire Infirmary; and WILLIAM DUNNETT SPANTON, Surgeon to the North Staffordshire Infirmary. 8vo., pp. 39. London: J. & A. Churchill, 1871.

THE pamphlet before us is a reprint of a few letters originally published in the *Lancet*, and is, we suppose, intended to embody the surgical observations of the authors during their "visit to the seat of war." Unfortunately for the interests of surgical science, these observations were made somewhat late in the day. More than three weeks had elapsed after the fight around Sedan before the scene of conflict was reached by our venturesome surgeons. Meanwhile the dead had been buried, the surgeons' work in field and hospital had been almost finished, and the hospitals in great part vacated. Doubtless the North Staffordshire gentlemen had a pleasant trip, as is usually the case with all sight-seers and relic-hunters who crowd historic fields when once the smoke of battle has lifted, and the grass has fairly commenced to grow upon the graves of the slain. But criticism from sources such as these must be received with caution, more especially if it be censorious.

It is an easy matter for the casual visitor to carp at the doings of those who have borne the burden of the day, and to pick out and pleasantly to notice matters which he may regard as faults both of omission and commission. But with all his keenness of observation he can form but an inadequate idea of the responsibilities of the military surgeon in time of action; nor can he comprehend the fearful and pressing exigencies which influence the latter in the performance of his duty.

We are led to these remarks by the evident fault-finding tone of the North Staffordshire letters, in which we think scant justice is rendered to the many gentlemen who faithfully laboured in their humane mission among the Franco-Prussian wounded. The writers of these letters doubtless did intend fairly to represent what they "observed at the seat of war;" but it seems to us that after all they saw but very little, and certainly, as far as the medical public is concerned, but very little that was worth reporting.

J. H. B.

ART. XXIX.—*Lectures upon Diseases of the Rectum.* By W. H. VAN BUREN, A.M., M.D., Professor of the Principles of Surgery, with Diseases of the Genito-Urinary Organs, &c., in the Bellevue Hospital Medical College, one of the Consulting Surgeons to the New York Hospital, of the Bellevue Hospital, &c. 12mo. pp. 164. New York: D. Appleton & Co., 1870.

THIS brochure consists of eight lectures delivered at the Bellevue Hospital Medical College during the session of 1869-70, which have been written out and published at the request of some friends whose estimate of their value we heartily endorse.

The first two lectures are occupied with the consideration of irritation of the anus dependent upon various causes, as skin diseases, and thread-worms, with the pathology and treatment of hæmorrhoids. For the treatment of internal piles Dr. Van Buren strongly advises removal by the ligature as one of the most satisfactory operations in surgery, holding that it is both effectual and abso-

lutely free from danger; which latter statement we suppose to be as true of this as of any operation whatever; for fatal tetanus, which we have known to follow the ligation of hæmorrhoids upon three occasions, may follow a simple scratch, and the likelihood of its occurrence cannot be taken into consideration by the surgeon as among the probabilities which should influence his prognosis. The value of nitric acid is only admitted for those cases where there is a bleeding, spongy surface without any prominent tumour.

For prolapse of the rectum when an operation was unavoidable Dr. Van Buren has always had great satisfaction in the use of the actual cantery, applied linearly to the mucous membrane in the direction of the long diameter of the gut, with one or two touches to the skin of the anus: the subsequent contraction presenting a very perfect bar to after descent of the bowel.

The subject of fistula in ano is discussed at some length, and early opening of all abscesses in the neighbourhood of the rectum is advised more to prevent burrowing than with any idea that the formation of a fistula will thereby be prevented; though such a result may occasionally be attained, as we have ourselves seen occur.

While it is so customary at the present day to pronounce that time as wasted which is spent upon the older authors, not only in medicine, but in general literature, we rejoice to hear our lecturer indulge in a digression to speak in praise of the general scholarly attainments and surgical acumen of Mr. Percival Pott, and to recommend to the class the perusal of his works.

For the treatment of fissure or irritable ulcer of the anus forcible dilatation and rupture of some fibres of the sphincter ani are endorsed as having proved uniformly successful in the hands of the author, and as being less severe than division of that muscle by the knife, as inculcated by Boyer.

Lecture VI., upon stricture of the rectum, contains a very full account of the causes of this affection, and the whole subject is treated in a more exhaustive manner than is the case with any of the other matters touched upon in the volume.

A good clinical description of cancer of the rectum is given in Lecture VII. The operation of lumbar colotomy is considered advisable in those cases of cancer, mostly epithelial, where the progress of the disease is slow, and we are unable to discover such secondary deposits as would contraindicate any interference. According to Dr. Van Buren, in cases of imperforate anus in children where colotomy is necessary, the weight of authority is in favour of Littré's operation in the groin, while that of Amussat in the lumbar region is most in favour in the cases of cancerous stricture in adults. In a foot-note upon the literature of the latter proceeding the subject is not brought farther than 1863, the later operations of Curling recorded in the *London Hospital Reports*, vols. ii. and iv., and some cases by other authors not being included.

The concluding lecture speaks of the diagnostic exploration of the rectum, atony of its walls and impacted feces, and contains some valuable hygienic directions.

We cannot approve of the orthography which persistently drops the diphthong in the adjective derived from feces, and to write *faces* and *fecal* on the same page, as our author does, appears inconsistent.

The style is finished and attractive. While Dr. Van Buren expressly disclaims the title of exhaustive for these lectures, in our opinion he has so fully accomplished his design in making them simple, intelligible, and practical, that they may be read with pleasure and profit both by the surgeon and general practitioner.

S. A.

ART. XXX.—*The Physiology and Pathology of the Sympathetic or Ganglionic Nervous System.* By ROBERT T. EDES, M.D. An Essay to which the O'Reilly Prize was awarded by the New York Academy of Medicine, May 5th, 1869. 8vo., pp. 152. Printed for the Academy. New York: Wm. Wood & Co., 1869.

THIS essay, while it does not pretend to be based on extensive original research, is nevertheless a sufficiently full and just exposition, to the date of publication, of a most difficult subject. Moreover, while it is not too full to be placed as collateral reading in the hands of students, the references are so complete as to make it suitable for the use of the practical worker. We shall endeavour to present, principally from the summaries of the author, the prominent features of the paper.

According to Dr. Edes, the sympathetic system includes the ganglion-bearing cord, situated on the sides of the vertebral column, from the superior cervical ganglion to the ganglion impar; of four ganglia in the head, the ophthalmic, sphenopalatine (Meckel's), otic, and submaxillary; and of various large and small ganglia in the thorax and abdomen, with their connecting cords, besides those vaso-motor nerves accompanying the cerebro-spinal nerves from their origin in the spinal cord, which have not passed through the ganglia. We have ourselves always thought that among the ganglia of the sympathetic should be included those on the posterior roots of the spinal nerves, as well as the ganglia of the pneumogastric and glosso-pharyngeal.

As to the elements of the sympathetic, they are said to be mere fibres, mere cells, and special peripheral terminations. As to *cells*, the views of Kölliker, Pollard, Duchenne, Beale, and Arnold are given with regard to the existence of apolar and unipolar cells in the ganglia, but no particular view is adopted. The majority of these authorities oppose the existence of apolar and unipolar cells, but the existence of bipolar and multipolar cells is abundantly established; so also the spiral-fibred bipolar cells of Beale and Arnold. The nerve *fibres* include the dark-bordered, and the pale non-medullated fibres of Remak, the variable proportion of these giving the different shades of colour presented by different portions of the sympathetic system. That many, if not all the dark-bordered fibres contained in the sympathetic are derived from the cerebro-spinal system cannot be denied, but whether they should strictly be considered a part of the sympathetic is perhaps doubtful. Yet it is more doubtful whether they can ever be anatomically or physiologically separated. Strictly speaking, the sympathetic fibres should be restricted to those originating in the ganglion cells of the sympathetic ganglia. The author states that the assumption by Jacobowitsch of certain cells of the spinal cord as sympathetic is apparently unfounded.

The *terminal arrangements* of the sympathetic are imperfectly determined; the proximate plexus of nucleated fibres upon the smooth muscles to which this system is distributed is, however, generally admitted.

With regard to a capital centre, the author writes thus: "What the primary centre for the sympathetic motor fibres is, or whether there is any distinctly limited centre, separate from the other motor ganglia, is not ascertained. It is undoubtedly above the medulla oblongata. The vaso-motor centre is supposed to be in the crura cerebri, but it certainly is not entirely uninfluenced by lesions higher up than this, as is shown by pathological facts. The fibres pass downwards in the cerebro-spinal axis, probably in the anterior columns,

leaving it through the anterior roots, and even through some cerebral nerves. They then, with the exception of certain fibres which have been before mentioned, and which follow throughout the trunks of the mixed motor and sensitive nerves, join the ganglionated cord, and are thence distributed." If these facts, based upon the observations of Budge, are correct, the vaso-motor centre, for the reasons above given, should, perhaps, in a strict classification, be excluded from the sympathetic, and the bundles of the latter must then be regarded as mere vehicles for those cerebro-spinal nerves which act as vaso-motor nerves. Or else it would seem that all attempts at separate anatomical classification must be laid aside. The truth is that the sympathetic cannot be separated from the cerebro spinal system, and to this conclusion indeed is the author properly drawn, as appears from the concluding paragraph of his section on the anatomy:—

"The sympathetic is to be regarded, according to the foregoing description, as a cerebro-spinal nerve, containing some fibres peculiar to itself, and distributed to the head and smooth muscular fibres. It differs from the other cerebro-spinal nerves in containing a large number of ganglia, at intervals, from near the beginning to the final distribution. It has a tendency to the formation of plexuses more or less complicated. The direct vaso-motor fibres are an exception to a part of this description, but are closely united to the remainder of the system by their distribution and functions." (p. 13.)

As to the distribution of the sympathetic it is to the smooth muscular fibres except in the case of the heart. We are informed that other exceptions are only apparent.

The physiological relations of the sympathetic to the pupil and smooth muscles, to temperature, circulation, heart, secretions, intestines, and pelvic viscera, we condense from the author's summary, on page 82:—

The sympathetic is distributed to both constrictor and dilator of the pupil, and assists in the movements of the iris. It excites several smooth muscles of the orbit and the skin, furnishes motor nerves to the heart, and controls the circulation in the bloodvessels, not only regulating the supply of blood to different organs, but also maintaining a due degree of contraction of the vessels, and exercising an important influence on the general circulation; the contraction is accomplished by the smooth muscular fibres, and the dilatation by the pressure of the blood. Heat, secretion, and nutrition are evidently influenced by the sympathetic, but the direct influence of this system or the cerebro-spinal on secreting cells is doubtful. It is a motor nerve for the intestines and genito-urinary apparatus; it contains also sensitive nerves, but the sensations usually become reflected motor impulses before they reach the brain. The distribution of the sympathetic takes place almost universally through plexuses containing ganglia, and the peripheral ganglia are able to continue the functions of the nerve independently. It is these ganglia which, under stimulation, act as paralytics or "brakes," diminishing its action and making the system one of inhibition. It will be recollected that this is a function usually ascribed to the pneumogastric, with which, however, the author's view is not inconsistent, if we admit the ganglion on this nerve to be sympathetic. A similar action sometimes takes place in more central ganglia, when a sensitive nerve becomes inhibitory. The system is a dependence upon the cerebro-spinal, from which it differs more in its distribution than its origin.

Its motor fibres are physiologically stimulated by reflex irritations, either from its own sensitive fibres, or from those of the remainder of the cerebro-spinal system, and by psychical stimuli; the reflection may take place in the ganglia near the distribution; probably also in those nearer the centres, in the spinal cord, or in the encephalon. The exact position of the encephalic

centres is, however, unknown, though they are probably above the medulla oblongata. Several portions of the spinal cord from which motor fibres for special organs arise, and from which stimuli act on these organs with greatest intensity, have been called spinal centres, and have received names corresponding with the organs influenced.

The consideration of the *pathology* of the sympathetic is preceded by the following truthful paragraph:—

“If our list of diseases or affections of the sympathetic system were to include only those proved to be such, it would be a very short one; but if, on the contrary, it were to consist of all that have been supposed to be caused by troubles of this system, it would be very much like a treatise on the theory and practice of medicine.”

The principal points in the pathology of the sympathetic are included in the last section, which we subjoin with little abridgment:—

The principal change is found in a hypertrophy of interstitial connective tissue with consequent atrophy of nervous elements.

The nerves of this system may be affected with neuralgia. (Colic, cœliac neuralgia, and, perhaps, angina pectoris.)

The iris often betrays irritation or paralysis of the sympathetic, from pressure by tumours of various kinds. It is also acted upon by lesions of cilio-spinal centres, and by reflex irritations.

It is for these reasons, and not from any essential connection, that progressive locomotor ataxy is sometimes accompanied by symptoms on the part of the pupil.

Many cases occur in which the effects on the temperature of vaso-motor paralysis, depending upon lesions either of nerve trunks, of spinal cord, or of encephalon, coincide with those determined by experiment.

The phenomena of fever are largely dependent on sympathetic disturbance.

The secretions are influenced by the nervous system, principally by the action of vaso-motor nervous fibres on the vessels. Certain motor nerves act apparently as stimulants to secretion, probably by their paralyzing effect on the sympathetic, possibly by a direct action on the secreting cells.

Many affections of nutrition are caused by injuries to nerves. It is probable that the larger part are due to irritation rather than to paralysis. A certain small amount of hypertrophy (as ophthalmic goitre, desquamation of epidermis), and sloughing are the most marked consequences of vaso-motor paralysis.

The grounds for assuming the existence of trophic nerves are very slight.

Several diseases of the skin are connected with nervous disorders probably of vaso-motor nerves (erythema, acne, urticaria, herpes, and, perhaps, pemphigus).

Some functional diseases are due to temporary disturbance of supply of blood, especially to central nervous system (epilepsy and allied affections).

The heart may receive too much or too little acceleratory stimulus from the sympathetic, and the same may be said of the intestines and uterine.

We heartily commend this essay to all students of the sympathetic, as the most comprehensive recent treatise on the subject of which we have knowledge, and regret that the mode of publication seems to permit such a limited circulation.

J. T.

ART. XXXI.—*The Discovery of the Nature of the Spleen, from an Investigation of the Lateral Homologies of the Liver, Stomach, and Intestinal Canal.* By HENRY R. SILVESTER, B.A., M.D., Lond., Associate of King's College, etc. 12mo., pp. 64. London: John Churchill & Sons, 1870.

OF the two theories prevalent with regard to the nature of the spleen, Dr. Silvester, with Doellinger, adopts that which makes the liver and spleen both *lateral* organs, symmetrical with each other, and the spleen an undeveloped liver of the left side, aiding the latter organ in its biliary function. It will be recollected that according to the other view, that of Müller, the liver and spleen are both regarded as *mesial* organs, and that the spleen is to be considered a blood-gland, having nothing to do with the liver. According to Silvester, the spleen is a *sanguiferous* gland, situated on the left side of the abdominal cavity. It is the left lateral homologue of a portion of the liver; the liver being a combination of a sanguiferous gland and "biliary apparatus." It is thus connected with the liver anatomically and functionally.

Not the least interesting point with regard to the former of these views, that adopted by Dr. S., is that it was the view adopted by the "philosophers of antiquity," including Aristotle, who endeavoured also to connect the liver and spleen in function, as the result of which they concluded that the spleen was either an undeveloped liver, or that it prepared the blood during the passage of the latter through its substance for the elaboration of bile in the liver, or that black bile was secreted in the spleen in the same way that yellow bile was secreted by the liver.

Whatever may be the correct view, there is no doubt that Dr. Silvester has collected much interesting information on this subject, which must aid in the ultimate decision of the question, and the monograph is one that has evidently involved laborious research. The question seems fairly put, and the arguments for and against are compared. We have not space for a detailed statement of either, and there is an unfortunate want of discoverable system in the arrangement of the argument, more particularly in the second part—that drawn from the function of the spleen—which makes it difficult to make a fair statement in abstract. We shall endeavour, however, to include the principal features of the reasoning for the view adopted by the author, without, however, attempting to observe the order in which he has himself placed them.

In the *first* place, the theory propounded rests mainly for its support on the *law of symmetry*, though it is based also, *secondly*, on the *nature of the functions* of the spleen.

First, as to the argument from *symmetry*, it is shown from comparative anatomy that the alimentary canal is symmetrical from its commencement at the mouth to the stomach; that from the stomach to the end of the small intestines the symmetry is not carried out, but that from the cæcum to the termination of the large intestine, the alimentary canal is as symmetrical as at its commencement. Of this asymmetrical portion, the vermiform appendix is the undeveloped homologue representing the left small intestine.

As to the liver, which, with the pancreas, is an outgrowth of the duodenum, it is an asymmetrical organ, for although it may be composed of any number of lobes, and may vary in shape, and have any number of ducts, yet there are never two livers, two gall-bladders, two hepatic arteries, or two portal veins, either united or otherwise, in the median line of the body. The fact that in connection with the foetal circulation there are two umbilical arteries and a

single umbilical vein, is consistent only with the supposition that the liver is an asymmetrical organ, the arteries being in no way connected with the liver, but being only the continuation of the iliac arteries. And being an asymmetrical organ in itself, some organ must be found symmetrical with it; such an organ is the *spleen*. The fact that this spleen is developed in the fold of peritoneum continuous with the anterior and posterior surface of the stomach, and extending between the great curvature, the diaphragm and transverse colon, in no way invalidates this supposition, since other organs are contained in the same fold of peritoneum, as, *e. g.*, the pancreas and the duodenum, which cannot be regarded as mesial organs. The absence, therefore, of bilateral symmetry in the liver, and also in the spleen, their symmetrical situation with respect to each other, and their being each supplied by a common trunk from the aorta, together with the want of symmetry in that portion of the abdominal viscera with which the liver is connected, are all held to confirm the opinion entertained by the author, in common with certain authorities from the earliest times.

Second, as to the argument from *function*. Although the author admits the spleen to be a sanguiferous gland, he denies that it is a blood-making organ, that is, that it supplies the germs of those cells which are ultimately to become blood-corpuscles, accepting Professor Owen's refutation of the hypothesis as sufficient. On the other hand, the author believes, "that at least one of the alterations effected in the blood has reference to the *removal of some of the effete constituents* of the circulation; the decomposed elements passing from the spleen by the splenic vein to be eliminated by the liver from the system." p. 43. The exact means by which this is accomplished are not known, but it is thought that the "retarded motion through the serpentine splenic vessels, or its stagnation in the splenic cells," contribute thereto. The natural objection that bile is secreted when the spleen is removed, does not hold, because bile is produced in the liver from the blood distributed to it by both the portal vein and hepatic artery, and not from the blood of either of these vessels alone; and from the fact also that it may continue to be secreted if either of these vessels be obliterated, provided that there shall be a supply of blood from any source.

He says further, that the inference—that the spleen is a useless organ—usually drawn from the fact that animals survive its removal, is absurd. It should rather be concluded that some other organ supplements the function of the spleen just as one kidney can accomplish the function of urinary excretion after the other has been removed.

The same anatomical details above referred to are brought forward as affording a clue to the solution of the difficulty; they are thus presented in summary by the author:—

"We have shown that the spleen has no biliary apparatus associated with it. We have also pointed out that the course of the splenic blood is across the mesial line of the body, and falls into the portal system of the liver, an organ proper to the opposite side of the abdomen, this course being altogether exceptional and different from what occurs in the case of any other viscus. Now, since the spleen is unprovided with a biliary apparatus of its own, and it makes use, so to speak, of the biliary apparatus of the liver, an organ on the opposite side of the body; and since, as we have shown, the liver is symmetrical with the spleen, and all symmetrical organs are similar, we are led to conjecture that the liver is composed of an organ similar to the spleen, combined with a biliary apparatus." p. 44.

That this hypothesis should hold, however, it becomes necessary to prove that the liver is, in reality, a combination of two organs, *viz.*, a blood-gland, similar to the spleen, and a biliary apparatus, combined. This second function is found, not in the glycogenic function of the liver, which is not peculiar to it,

but, 1st, as the result of some observations of Lehmann, in which he found the proportion of white corpuscles of the hepatic blood fourfold that in the portal blood, and noted also certain differences in the appearance of the red corpuscles, which he explained by the supposition that the liver was the seat of the development of those elements formed from the white blood-corpuscles: 2d. The immense size of the liver in the fœtus. The differences pointed out in (1) are supposed to be allied to the similar established points of difference between the blood of the splenic artery and the splenic vein.¹ The fact (2) is thought to tend to show that in fœtal life the liver performs the function only of a ductless blood-gland, the biliary function, essentially connected with that of the intestine, being for the time in abeyance. Further evidence of the double function of the liver is thought to lie in the fact already alluded to, that the organ can be removed without permanent disadvantage.

No one can deny that Dr. Silvester has brought to bear upon this subject facts which tend to make it probable that the spleen possesses such nature as he assigns to it; but we cannot admit the proposition proven; nor do we think it capable of proof by the method of study he has adopted, at least so far as function is concerned. We admit the argument as to the anatomical relation is better sustained than that from a physiological stand-point; also that if the anatomical be admitted, there is at once established a presumption of the existence of a functional relation.

J. T.

ART. XXXII.—*On the Etiology and Prevalence of Diseases of the Heart among Soldiers. The "Alexander Prize Essay."* By ARTHUR B. R. MYERS, Assistant Surg. Coldstream Guards. 8vo. pp. 92. London: John Churchill & Sons, 1870.

No class of diseases occurring in the army during our late war excited more interest among physicians than that of diseases of the heart, and this interest was manifested not merely on account of their frequency, but also because a condition which has been designated, perhaps from a lack of knowledge of its true pathology, as "irritable heart,"² or as "muscular exhaustion of the heart,"³ and which is undescribed by many European writers on the diseases of soldiers, was found to be of frequent occurrence among our soldiers, and especially among those who, in consequence of their extreme youth, had not reached a sufficient degree of development to enable them to endure without injury the hardships of the field. This form of cardiac disease has not escaped the notice of the author of this essay, and many of its clinical characters are clearly pointed out, as well as its liability, if not relieved by treatment, to pass into hypertrophy.

Dr. Myers shows very conclusively that diseases of the heart are of more frequent occurrence among soldiers than in the civil population, and also that the ratio of deaths and disability from this cause is greater among them than

¹ It is plain that this reason would be much more forcible if Dr. Silvester admitted the spleen to be a constructive organ so far as the blood is concerned, for inferring, as he does, from this demonstration of Lehmann's, that the liver is such an organ, the analogy would be much closer were he to admit the same function in the spleen.

² Da Costa, *American Journal of the Medical Sciences*, Jan. 1871.
Hartshorne, *Ibid.*, July, 1864.

among sailors, either of the navy or of the merchant marine, or the members of the London police. He has likewise demonstrated that disease of the heart in the army cannot be attributed, in the great majority of cases, to rheumatism, Bright's disease, or to violent manual labour—its most frequent causes in the civil population—and has shown that syphilis and the use of tobacco and whiskey can have but little more influence in the production of this class of diseases in soldiers than in others: Disease of the mitral is more common than disease of the aortic valves in the civil population, while the reverse is true of the army. All these facts go to prove that there must be some special influence in the life of the soldier, which predisposes him, not merely to disease of the heart, but to special forms of it; and this influence, Mr. Myers believes, consists "in the prejudicial construction of the uniform and accoutrements—this producing such obstruction to the circulation that, either directly or indirectly, as by aneurism and disease of the aortic coats, &c., the heart is abnormally strained, and frequently passes into a stage of functional derangement, and ultimately of organic disease." In all occupations requiring the exertion of great muscular power, the importance of having the chest perfectly uninterfered with in its movements, so as to allow the greatest possible freedom to the heart and lungs, is fully understood, but in the dress of the British soldier this is entirely overlooked, and he is compelled to go through the fatigues of the drill encased in a tightly-fitting and closely-buttoned coat. The prejudicial effect of such clothing is especially noticeable in the young recruits, whose chest is constricted before it has been converted, by the ossification of the epiphyses of the ribs and the ossific union of the bones of the sternum, into a firm protecting case for the heart and lungs. Mr. Myers believes that the sphygmograph will aid us in the detection of this irritability of the heart long before any change can be detected by auscultation or percussion, and presents us with the tracings of this instrument in twelve cases; in all of which more or less marked diastolic murmurs are to be observed. In a strong man the heart does not succumb, but by growth gains strength, and may thus be enabled to overcome its difficulties for a time, but sooner or later this hypertrophy becomes excessive, and either disease of the aortic valves, or aneurism, is superadded to it, and the man is lost to the service.

In regard to the treatment of these diseases Mr. Myers says this must be chiefly palliative, for he believes that even the functional derangement of the heart is rarely cured.

Mr. Myers shows in this essay but little familiarity with the papers that have been written on this subject by physicians of this country. It is true that these have not been numerous, but there are one or two of them which he would have done well to consult.

J. H. H.

ART. XXXIII.—*The Naval Medical Service; its Present State and Prospects, with Suggestions for its Improvement.* By FREDERICK JAMES BROWN, M.D. Lond. and Edin., F.R.C.S., Fellow of University College, London; Consulting Surgeon to St. Bartholomew's Hospital at Rochester; formerly Assistant Surgeon in the Royal Navy. Second edition. 12mo. pp. 60. Printed by J. E. Adlard: London, 1871.

THE conditions of medical service in the British navy are of such a character as to have created much dissatisfaction among those gentlemen who are employed in it, as well as reluctance in the profession generally to engage in it.

The number of candidates for admission into the medical corps of the royal navy is not equal to the demand.

Medical officers of her majesty's navy have relative rank, commencing with the grade of sub-lieutenant and ending with that of rear-admiral. The scale of rank does not seem to be unsatisfactory. The complaint is that while equality of relative rank of the staff and line, or as they denominate the classes "civil" and "executive," officers, is apparent, inequality is in fact very great. The question of precedence on the ground of rank between executive officers (the line) and civil officers (the staff) is not mooted at all. But the grievance is in the rates of compensation, and in the different modes of reckoning their claims for retired pay and pensions.

Chaplains and paymasters at the age of fifty-five receive £450 retired pay, but staff surgeons only £400 at the age of sixty years. Chaplains who accept "any living" are at once placed on the retired list. Dr. Brown says that surgeons would like to be placed also on the retired list on engaging in civil practice. Commanders and staff surgeons rank together. The first, after twenty one years' service, may retire in perfect health at the age of forty-eight years, on £400 a year; but the last can retire on the same amount of pay only after twenty-seven years' service at the age of fifty-five. Lieutenants must retire at the age of forty-five, after nineteen years' service, on £325; but surgeons, who rank with them, may retire after twenty years' service, at the age of forty-five, on £301, provided they are infirm.

Retired pay is declared to be a just and honourable reward for past and meritorious services. Dr. Brown contends that all should be dealt with alike on the principle of equality of privileges to grades of rank relatively equal. Rank to the medical profession in the navy is worthless without such interpretation. He says, "Entering the service at adult age, surgeons do not take so readily to sea-life as youths; moreover, they cling to the idea of eventually becoming practitioners in civil life. The desire to retire from sea-life while energy remains is deeply cherished by young medical officers, who, at that period of life, entertain exalted ideas of the prizes possibly within their reach; but with the lapse of years such dreams fade, and men beyond the middle term of existence, especially those that have families, accommodate themselves to circumstances and work on steadily in the hope of securing a good retirement."

As a means of rendering their majesty's naval service more attractive to medical men, he suggests that the retired and half-pays, pensions, &c., should be made the same for all of the same rank; that the title of assistant surgeon should be abolished, and that a class should be commissioned for a period of ten years to be retired at the expiration of the term, on a reduced pay, liable to be recalled to active service at any time during ten years after retirement, and, if not recalled within that period, to be discharged from the navy list without claim to pension of any kind. He proposes, also, optional retirement after twenty years' service at a fixed rate of pay, equal to that of line officers under the like conditions.

Dr. Brown's style is somewhat obscure, or his statements are not quite full enough to be easily understood by persons not familiar with the details of the organization of the English navy, and the system of compensation adopted in it. It is quite clear, however, that there are grounds of dissatisfaction which ought to be removed.

The act of Congress, approved March 3, 1871, which gives a relative rank to medical officers in the navy of the United States, seems not to have settled the controversy so long existing between the line and staff officers. The latter accept the law, although it falls short of their just claims; but the former, it

is asserted, will not acquiesce by frankly respecting its requirements. It is to be regretted that Congress did not, in framing this law, employ precisely the same terms used in the act which establishes the rank of medical officers in the army, namely: "shall have the rank, pay, and emoluments of" captain, major, &c. &c., because such language is not susceptible of more than one construction. Medical officers, who have the rank of major, for example, legally possess all the rights pertaining to majors of the line, whether of infantry, artillery, or cavalry. They are all majors *de facto*, and are respected and treated as majors, although they differ in their official obligations and employments, the details of which are prescribed by departmental regulations. The effect is that caste distinctions cannot be recognized in any manner; the major in one department cannot assume that he is any way better than a major in any other department, and the consequence is harmony amongst them all so far as relates to relative position or rank. The principle appears to be sound. There is ample testimony that it works well, and therefore we recommend its adoption in all laws which may be framed in connection with the subject in the navy of England or the United States.

W. S. W. R.

ART. XXXIV.—*Chemistry: General, Medical, and Pharmaceutical, including the Chemistry of the U. S. Pharmacopœia. A Manual of the General Principles of the Science, and their Applications to Medicine and Pharmacy.* By JOHN ATTFIELD, Ph.D., F.C.S., etc. pp. 552. Philadelphia: Henry C. Lea, 1871.

THIS work, in its first edition, was very favourably received, not only in Great Britain, but also in this country. It has been so well adapted to supply some of the much felt wants of the pharmacist, as well as the teachers of chemistry and pharmacy, as to induce a call for its republication in this country. In response the author has modified this, his second edition, by adapting it to the U. S. Pharmacopœia, thus including the chemistry not only of the official formulæ of Great Britain, but also those of the United States. Not intended as a systematic treatise on chemistry, but as a special application to a particular branch of that science, a selection is made of topics which are of practical importance, excluding those of scientific interest only, but embracing every article recognized officially as remedial agents.

The plan of the book, as stated in the preface, is the best adapted to meet the requirements of the medical and pharmaceutical student. "Introductory pages are devoted to a few leading properties of the elements. A review of the facts thus unfolded affords opportunity for studying the views of philosophers respecting the manner in which these elements influence each other. The consideration in detail of the relations of the elementary and compound radicals follows; synthetical and analytical bearings being pointed out, and attention frequently directed to connecting or underlying truths or general principles. The chemistry of substances naturally associated is next considered. Practical toxicology, and the chemical as well as microscopical characters of morbid urine, urinary sediments, are then given. The concluding sections form a laboratory guide to the chemical and physical study of quantitative analysis."

In following out this plan, tables are inserted in the progress of the study, by which the student obtains a summary or short directions for the analysis of aqueous solutions of the salts of the metallic elements, becoming more and more complex as the number of the simple substances under study have increased, until

adapted to an examination, where all or any known radical may be sought for and its presence ascertained, whether belonging to the basylous or acidulous class. The chemistry of substances naturally associated, leads to the examination of articles of the *materia medica* derived from the animal and vegetable kingdom, and the active principles to which they owe their virtues, bringing together a large amount of information in a compact form in relation to their properties, the mode of elimination, and the best methods by which the value of the crude drug may be estimated, and sophistication detected.

In quantitative analysis a concise *résumé* is given for the estimation of the various substances, both gravimetric, indicating the best combination from which the calculation should be made, and volumetric, giving the strength of the standard solutions, with useful cautions to prevent erroneous results. The chemical nomenclature and notation have been adapted to the more modern views of the nature of chemical combination, but in the diversity of modes of expression, that has been adopted which brings the names of compounds more nearly in accordance with former usage than meets the concurrence of all the recent writers on the subject, the metallic radical being placed after the name of the salt, as sulphate of potassium, instead of preceding that name, as potassium sulphate, the latter being considered as too unlike the original name for general adoption. It is, however, questionable whether, where new and entirely opposite views are involved, names which, while entirely consistent with these views, and are at the same time indicative of this fact, would not tend to a clearer perception than the use of such as, from close resemblance, do not attract the attention to the same extent. This effect is more to be feared in those who, from superficial acquirements, are not familiar with the minute change, and in some instances want of change in the names employed, as sulphate of lead, which belongs both to the old and new views, while lead sulphate could only be used on the latter.

Dr. Attfield's work will prove a useful assistant not only to those who desire to study the subject in its practical bearings, but also to the general student of chemistry, to the apothecary, and to the physician, especially when his business lies at a distance from the great commercial marts, both in preparation of compounds for immediate use, and the examinations of those for the supply of which he depends on others.

R. B.

ART. XXXV.—*A Handbook of Operative Surgery.* By JOHN H. PACKARD, M.D., one of the Surgeons to the Episcopal Hospital, Secretary of the College of Physicians of Phila., etc. With 54 steel plates, and numerous illustrations on wood. Philadelphia: J. B. Lippincott & Co., 1870.

To write a comprehensive treatise on operative surgery within the limits of a handbook is an arduous task, precluding in a great degree, as we are told in the preface, the consideration of symptoms, diagnosis, and general treatment, and to compress the subject into a little more than two hundred pages of large print, with numerous wood-cuts interspersed, necessitates the omission of many details of the operations discussed and the entire exclusion of some others. When the difficulties incident to the work are considered, we think the author of the volume before us has accomplished quite as much as could be looked for within such narrow limits.

The description of the different forms of operation for the relief of strangulated hernia is hardly given at the length due to the importance of the subject, occupying, as it does, less than three pages. The proceeding, now considerably practised, for the radical cure of inguinal hernia, is described at some length, and a wood-cut of the guide for the passage of the sutures is given, which guide, we may say in passing, is the great modern improvement in the operation. Dr. Packard speaks of the operation of gastrotomy as being one of difficulty, which is hardly in accordance with the expressed opinion of those who have done it. We have ourselves never had occasion to perform it upon the living body, but cannot conceive of any difficulty presenting itself, though that it is sufficiently *serious* is proved by the fatal termination of almost all the cases recorded up to the present time. The section in which the various modes of treating strictures of the urethra is considered, is full, and contains valuable hints to those having the care of these sometimes very perplexing cases. The paragraphs upon the surgical anatomy involved in the various operations are concise and accurate.

Though the author has generally limited himself to the description of a single method of operating, as being all that the limits of his volume will allow, the student will find in it directions for performing most of the operations which can be required by the exigencies of ordinary practice, and which are in use at the present day.

The book is profusely illustrated. The large plates, which are old friends, have been much improved and sharpened by retouching, and from their number will make the volume desirable to many who have not access to more expensive works. Many wood-cuts have been incorporated with the text, but we think Dr. Packard has been rather hardly treated in not having been allowed at least one new steel engraving, especially as he is so well known to use his pencil with such admirable effect.

S. A.

ART. XXXVI.—*A Treatise on the Chronic Inflammation and Displacements of the Unimpregnated Uterus.* By WM. H. BYFORD, A.M., M.D., Professor of Obstetrics, and Dis. of Women and Children in Chicago Med. Col.; Author of "The Practice of Medicine and Surgery, applied to the Diseases and Accidents Incident to Women," etc. Second edition, enlarged. With numerous illustrations. 8vo. pp. 248. Philadelphia: Lindsay & Blakiston, 1871.

A GOOD book from a good man; somewhat shaky in the humanities, but sound in doctrine, and full of suggestive thoughts, and useful information.

Dr. Byford has long been known to the medical world as a hasty, but conscientious writer. His work on the "Diseases and Accidents Incident to Women" is one of the best in the language, yet we must confess to a dislike to the tautophony of its title. In the work before us, he takes up more especially the sympathetic and constitutional disturbances arising from the chronic inflammation and displacements of the uterus. Upon these perplexing phenomena he throws so much light, that the profession owes him a debt of gratitude. We do not hesitate to say, that the libraries of those who are paying any attention to the diseases of females, are certainly incomplete, without this ripe experience of a thoroughly earnest and practical man.

W. G.

ART. XXXVII.—*A Treatise on Asiatic Cholera.* By C. MACNAMARA, Surgeon to the Calcutta Ophthalmic Hospital. 8vo. pp. 557. London: John Churchill & Sons, 1870.

THIS treatise is the work of a gentleman who has had the great advantage over some others who have written on the same subject, of studying the disease in a country in which it originates and is endemic. It may be the opinion of many that the book contains little or nothing that is positively new, but few, we think, will read it, without having the conviction forced upon their minds that the subject is one to which the author has devoted much thought and labour, and although advancing and sustaining a theory of his own with much ability, that his method of handling the theories of others is eminently fair. His hypothesis of the disease may be stated in the following words: Cholera never originates *de novo*, but always spreads from one human being to another, by means of the discharges finding their way into drinking water, and thus into the intestines. But this infecting matter must be in, what he calls, the vibronic stage of decomposition, in order that it may induce its specific action on the walls of the intestinal canal. It is to be noted, however, that no special influence in inducing cholera is attributed to the vibrones; their presence simply indicating that the organic matter in the water is passing through a certain stage of decomposition, during which process, it seems capable of imparting a similar action to the epithelium of the intestinal canal—a conversion of force, as Dr. Farr calls it. It is therefore only necessary that the organic matter of this particular stage of decomposition should find access to the intestinal canal, and undoubtedly it does so most frequently, by the contamination of the drinking water, but it is conceivable, that, if the dejecta of a cholera patient be allowed to dry, either on the floor of his room, or on his clothing, minute masses may become disengaged, and, floating in the air, attach themselves to the mucous membrane of the mouth and nose, and be swallowed with the saliva. In this way is to be explained the frequency with which washerwomen, and the attendants upon the sick, suffer. This hypothesis will be found to explain most of the phenomena of the disease satisfactorily, especially after a due consideration of the peculiar habits of the native population of India, and of the manner in which the country is supplied with water. The water supply is almost entirely by means of tanks, which are so placed that they receive to a great extent the surface drainage, and as it is the custom of the natives to defecate, and to throw the passages of the sick on the ground immediately surrounding their dwellings, a contamination of the water in these tanks cannot fail to take place, whenever there is a fall of rain. If the fall of rain be prolonged and very heavy, its action has been proved to be beneficial, by flushing the drains and by washing out, or at all events diluting, the poisonous matter in the tanks. Sometimes water used for drinking is even more directly contaminated, as it is said that the natives not infrequently after an attack of cholera bathe in the tanks and wash their soiled clothes in them. Of course, it can readily be understood that the river water may be rendered poisonous in the same way. To the objection that might be here made, that cholera does not attack all those who drink water thus contaminated, Mr. Macnamara replies, that the same immunity on the part of some may be observed after exposure to the contagion of other diseases, and thinks that in this case the immunity may depend upon the condition of the stomach. Thus, if the water be swallowed in moderate quantity, and when the contents of the stomach are acid

the poisonous material will probably be destroyed; but if they be alkaline, or if the amount of water be large, so that some of it passes directly into the small intestines, cholera will almost inevitably result. It is rather remarkable that if the decomposition of the organic matter be advanced beyond the vibrionic stage, or in other words if the vibriones are replaced by ciliated infusoria, the cholera dejecta appear to be incapable of producing their peculiar effects; and to this fact is to be attributed, very frequently, the cessation of sickness on board ship. For instance, a vessel may sail from Calcutta with a supply of water from the river Hoogly, which is always more or less contaminated. A few days later, cholera may break out to disappear upon the occurrence of more advanced decomposition in the water. The dejecta of a cholera patient, if mixed with dry earth, appeared to be rendered innocuous, but regain their properties whenever moisture is supplied to them.

Too much importance, Mr. Macnamara thinks, has been attributed to the influence of the monsoon, and to the prevalence of certain winds, in the spread of cholera. The moisture which these bring with them will, of course, favour a tendency to decomposition, but there can be no doubt that they act chiefly by facilitating commerce, and the navigation of the rivers, and consequently the intercourse of the people. The monsoon has certainly never been the sole means of the dissemination of the disease; for while many places in its track have escaped entirely, cholera has frequently been known to advance against the wind. In the historical part of the treatise, which occupies nearly half the volume, it is shown that the disease, in its advance from India to Europe, and thence to America, has never travelled faster than man; that its introduction into a country can generally be traced to the arrival of an infected vessel, and its first victims are those brought most immediately in contact with the ship or the passengers. An argument in favour of its spontaneous origin has been drawn from its occasional occurrence at sea, but Mr. Macnamara asserts that in all the recorded instances of its outbreak on board ship, the vessel had either sailed from, or touched at an infected port, and thinks it not unreasonable to ascribe the disease in these cases, either to contaminated water or to the fomites of the disease in some other shape, carried from the infected port. It has been found, moreover, that in those countries having the most frequent and direct communication with India, it is most frequent, while, on the other hand, the countries which have hitherto escaped its ravages are those having no such intercourse; or, as in the case of Australia, only reached by a very long voyage, during which, of course, the decomposition of the organic matter in the water has advanced beyond the vibrionic stage. He adduces, further, in favour of his hypothesis, the facts that cases of cholera become infrequent upon the occurrence of frost, are most numerous during very warm weather, and that the inhabitants of those parts of towns in which the drinking water is most likely to be contaminated, suffer most. A desert is the only place where cholera is incapable of establishing itself, and probably owes its immunity to the scarcity of moisture.

Mr. Macnamara explains the greater prevalence of the disease in some years than in others in the following way:—

“If we believe the disease to depend on organic matter having peculiar properties when in a certain stage of decomposition, its action being checked by cold, it follows that the very existence of cholera must depend upon heat and moisture. It was, in a year characterized by excessive heat and rainfall, that the great epidemic of 1817–18 broke out over India, and, in fact, as I have shown, epidemic cholera in this country has always burst forth in seasons of this kind, and having just become intensely vigorous, through favouring meteor-

ological influence in Bengal, it has been disseminated over India in the same deadly form, being too often carried there by man, to the Straits, China, Persia, Arabia, and Europe, and over all those parts of the world easily accessible from India. * * * Supposing that the year had been a dry one, it would have been impossible for the epidemic outbreak of the disease to have occurred. Cholera was probably generated as usual over its endemic area in 1817, but the unusual amount of rain which fell in the early part of the year, together with the excessively high temperature, gave force to the disease."

The morbid anatomy of the disease is very fully discussed. The most characteristic lesions are, of course, to be observed in the epithelial cells lining the alimentary tract, and also of other parts of the body. These changes are not to be regarded as *post-mortem*, but occur during life, and may be readily seen if the dejecta of a patient be examined microscopically immediately after their passage. The cells, under a moderate power, will be found to contain a good deal of molecular matter, so as to present some resemblance to pus-cells. If the examination be again made at a late stage of the disease, the molecular matter will have increased, and ultimately the cells will have lost their usual regular form, and have become jagged; and still later, only an irregular mass of molecular matter is to be seen. It is an aggregation of these molecular masses which constitutes the bulk of the flocculent substance noticed in the rice-water stools of cholera patients. This rapid death and destruction of the intestinal epithelium during life constitutes, therefore, the characteristic feature of the disease, and renders it so deadly. Desquamation of the epithelium takes place in other parts, and it is doubtless to a similar affection of the mucous membrane of the mouth and nose, that the loss of the senses of taste and smell is to be attributed. The tubercles of the kidneys, the alveolæ of the lungs, and the minute arteries, are, after death, generally found blocked up with these imperfect cells. In some cases, coagulation of the blood in the venous radicles of the intestines has been found, and Mr. Macnamara is disposed to think that this takes place not unfrequently in those cases which recover; in fact, he attributes the recovery, in great measure, to this coagulation, as, when once it has occurred, it must most effectually prevent the further loss of serum, and perhaps hasten reaction by favouring the absorption of the interstitial liquids. The lungs in more than half the autopsies were congested, the vessels being filled with a dark viscid blood.

There is no reason to believe, Mr. Macnamara thinks, that the symptoms of the disease are due to a fungus, nor can any fungoid growth be discovered in fresh cholera stools. In regard to this point, he says:—

"Even after protracted collapse, I have examined the contents of the intestinal canal diligently for the appearance of mycelial threads or sporangia, and have absolutely failed, in numerous instances, in detecting any characteristic elements of the kind. They may exist there, but I should be sorry to have to define them, and much less to determine to what species they belong. Of this I feel confident, that they do not produce in the dejecta from cholera patients species differing from those which are grown in decomposing epithelium, and mucus from the intestines of human beings dying from other diseases. I have varied my observations bearing upon this point in every conceivable way, and although hoping, year after year, to discover a fungus peculiar to cholera, and thus settle much that was obscure in the etiology of the disease, I am reluctantly compelled to abandon my faith in the existence of any such growth."

Two other theories in regard to the nature of cholera are reviewed at considerable length; that of Dr. George Johnson, and that of Prof. Pettenkofer, of Munich. It is well known that the former holds that the symptoms of cholera depend upon the presence of a poison in the blood, and that the vomiting and

purging are efforts of nature to eliminate the poison, and are rather to be encouraged than checked. The presence of such a poison has never been proved, and experience has shown that the so-called eliminative treatment is attended with great mortality, a fact which Mr. Macnamara feels sure that 90 per cent. of all physicians practising in India will confirm. The testimony of the author on this point is of some value, as, in the early part of his medical career, he was in a position to observe the results of Dr. Johnson's practice, and was disposed to think the castor-oil treatment a good one, but abandoned it when a more extensive experience had shown him its want of success. He has, moreover, shown that anæmia of the lungs does not exist in the majority of cases, and that, when present, it is only a manifestation of a general deficiency of blood, and cannot be shown to be dependent upon spasm of the minute pulmonary arteries. The eliminative treatment in cholera has never appeared to us much more rational than one which would tend to increase the amount of the eruption in smallpox, and although it has been sustained with a great deal of energy and eloquence by its proposer, it has been adopted only to a limited extent. We are glad, therefore, to have the testimony of an independent observer on this point. Dr. Pettenkofer holds that in addition to a specific poison, there must be a peculiar soil for the generation of cholera, but the author's views in regard to this theory have been incidentally given in the earlier part of this notice.

The treatment recommended is very simple. The discharges are to be checked at once by means of opium, to which may be added an astringent. Acid drinks—either dilute sulphuric or citric acid—are to be given, as it is found that the molecular changes in the epithelium of the intestinal canal are checked by the acids. The methods recommended for the prevention of the disease may be readily inferred from what has been already said, and consist principally in the preservation of the water supply of towns from contamination, and in the enforcement of a judicious quarantine. Every exertion, however, should be made to prevent the spread of the disease through the pilgrims who annually resort to some of the sacred rivers in India.

We have endeavoured to place the author's opinions and views as succinctly as possible before our readers, some of whom may perhaps be inclined to think, that the volume has not added materially to our knowledge of the disease, and especially of its morbid anatomy; for even the microscopical appearances of the epithelial cells are those which would be inferred, not only from our previous knowledge of the composition of the rice-water discharges, but also from what the microscope has taught us takes place whenever there is a rapid proliferation of cells. If we mistake not, the peculiar alterations in the intestinal canal were first pointed out by the late Prof. Horner, of Philadelphia. There is evidence also of haste in the preparation of the book, many parts of it being, as the preface admits, rough and unfinished in their composition, and it is perhaps to be regretted that a proportionately larger space has not been devoted to a clinical description of the disease; but the book is, nevertheless, to be regarded as a valuable contribution to medical literature. J. H. H.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *On the Function of the Prostate Gland.*—Dr. KRAUS, Editor of the *Vienna Medical Times*, states his belief that he has discovered some essential points relating to the function of the prostate gland, and makes some preliminary statements which he conceives will be found to deserve attention.

1. The seminal fluid, as long as it remains within the testes, vesicles, and other seminal passages, is colourless and scentless, being in appearance exactly like fresh honey while deposited in the comb; and in its reactions it is neutral.

2. Only when it has quitted the passages and arrived in the urethra does it acquire its white colour and its peculiar faint smell.

3. During its passage through the prostatic portion of the urethra, the prostate empties out its fluid, colours the semen white, and confers upon it the faculty of coagulating when exposed to the air (alkaline reaction). Semen taken from the seminal vesicles does not coagulate, but remains clear, colourless, and scentless.

4. The spermatozoa, in the absence of the prostatic fluid, cannot live in the mucous membrane of the uterus of mammalia; but with its aid they may live for a long time in the uterine mucus, often more than thirty-six hours.

I have conducted these experiments with the greatest care, and recommend their repetition, in order that the truth of my positions may be ascertained. From the above, the conclusion may be drawn that the prostatic fluid exercises an unlimited influence on the viability of the spermatozoa, sustaining it when endangered by the mucus secreted by the mucous membrane of the uterus.

This is undoubtedly the case with those species of animals which possess a prostate, and I intend next to extend my investigations to those species which are destitute of this.—*Med. Times and Gaz.*, Feb. 11, 1871.

2. *True Hermaphroditism in Man*, by Dr. C. L. HEPPNER, of St. Petersburg.—The name true hermaphroditism is only properly applied to such cases as present in the same person the organs both of the male and female, and from the class we must eliminate all cases in which the only peculiarity is that the organs common to both are so formed as to make it difficult from these alone to distinguish the sex. The only absolute criterion of true hermaphroditism, then, is the presence of the glands peculiar to the two sexes, the ovaries with Graafian vesicles on the one hand, and the testicles with the seminal tubules on the other. On this principle we must distinguish as spurious hermaphrodites

all cases of simple cryptorchismus, hypospadias, defective development of the penis, hypertrophy of the clitoris, narrowness or occlusion of the vagina, and alteration of position of the ovaries. The author collects from the literature of the subject ten cases of supposed true unilateral hermaphroditism, and seven of supposed bilateral; but he considers that in these cases the evidence of true hermaphroditism has not been complete, for in some of them the description has been imperfect, and in some there was some defect in the structure of the glands—for instance, the Graafian vesicles were wanting in the ovary in some cases, and in one there was cancer of the ovary. The author, however, gives the details of a case which he has examined, in which there was undoubted true bilateral hermaphroditism, the ovaries and testicles on both sides being present, and quite recognizable by their microscopic characters, Graafian vesicles being found in the ovaries and seminal tubules in the testicles.—*Glasgow Med. Journ.*, May, 1871, from *Reichert & Du Bois-Reymond's Archiv*, No. V., 1870.

3. *Absence of Urinary and Generative Apparatus in a Fœtus*.—Dr. MATTHEWS DUNCAN read before the Medico-Chirurgical Society of Edinburgh a note of this rare malformation which occurred in an eight months' fœtus otherwise healthy, which survived its birth about forty-eight hours. In it there was entire absence of the urinary and generative systems. There was not the slightest indication even of a perineal raphe, nor any external trace of organ except a tubercle of the size of a pea, which was found on examination to contain no structure except skin and fat. The rectum was full of meconium, and ended abruptly in the pelvis; not a trace of bladder or ureters existed. Small bodies, which were probably the suprarenal capsules, were found in the natural position; but these could not have been rudimentary kidneys, as there was no trace of pelvis. There was no cystic degeneration. Two little bodies like peas containing a vestige of tubular structure were found in the inguinal canals. The chest-organs were healthy.—Dr. Duncan remarked on the extreme interest of this case, not only from its rarity, but also in a physiological point of view, in its bearing on the question of the excretion of urine during fœtal life. It contrasted with the rare case of hydronephrosis which last year he had brought before the Society.—*Brit. Med. Journal*, March 4, 1871.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

4. *The Present State of our Knowledge respecting the Action of Mercury on the Liver*.—Dr. THOMAS R. FRASER, in a very interesting paper in the *Edinburgh Medical Journal* for April, 1871, discusses this subject. When we consider, he says, that the belief in the existence of the cholagogue action of mercury is founded, in a great measure, on explanations of its effects in pathological conditions regarding which no exact knowledge exists, it is not surprising that the modern doctrines of the nature of the action are somewhat vague and even conflicting. These doctrines appear to be resolvable into the four following: 1. That mercury simply increases the *flow* of bile into the intestines; 2. That it causes an increased *formation* of bile by removing abnormal conditions that interfere with the secreting function of the liver; 3. That it causes an increased *formation* of bile by an indirect action on the liver; 4. That it causes an increased *formation* of bile by a direct and primary action on the liver. It is of importance to bear in mind that, as has been stated, the evidence on which these doctrines are founded is mainly derived from observations in disease. This evidence has failed to satisfy many physicians, who maintain, what may for convenience be termed a fifth doctrine, that mercury has no cholagogue action whatever.

Each of these doctrines Dr. Fraser examines in detail, and arrives at the following conclusion as regards them in the order in which they have been mentioned:—

I. Murray's experiments have shown that calomel increases the vascularity of the gastro-intestinal mucous membrane;¹ it is not unlikely that it exerts the same influence as chyme on the flow of bile; and we may thus arrive at some conception of the mechanism by which mercury may sometimes cause an increased discharge of bile, apart from its action on pathological conditions, and irrespective of any direct or indirect action on the secreting function of the liver.

II. Clinical experience gives some support to the doctrine that mercury may cause an increased formation of bile by removing abnormal conditions which interfere with the secreting function of the liver.

III. The doctrine that mercury causes an increased formation of bile by an indirect action on the liver is only a conjecture, plausible, no doubt, but unsupported by evidence sufficient to render it more than a theoretical explanation.

IV. It is quite legitimate to maintain this as a *possible or probable explanation of several of the observed facts*, until sufficient evidence is brought forward to disprove it. We shall presently consider the evidence that has been advanced for this purpose.

Reviewing the various points to which attention has been drawn, Dr. Fraser is led to entertain the opinion that mercury undoubtedly possesses a cholagogue action, but thinks that we are entitled to maintain only that the cholagogue action of mercury consists in an increase of the flow of bile into the duodenum. By maintaining this doctrine, the manner in which this increased flow is effected is left an open question. The doctrine itself is essentially founded on the following argument:—

(a.) Certain characters of the alvine dejections imply an absence or diminution of bile, and these characters are present in various diseases.

(b.) In many of these diseases, mercury restores the alvine dejections to their normal condition; or produces in them, as well as in normal dejections, certain characteristic appearances.

(c.) The characteristic appearances caused in the alvine dejections by the administration of mercury are due to the presence of bile constituents.

V. As the doctrine that mercury has no cholagogue action whatever is mainly founded on the researches of Dr. Scott,² and the "Report of the Edinburgh Committee on the Action of Mercury on the Liver," by Dr. Bennett,³ it may confidently be asserted that it is not supported by sufficient evidence. In order to prove the existence of this action, it is sufficient to establish that *the quantity of bile discharged into the intestines may be increased by mercury*; but the experiments of Scott and the Edinburgh Committee were performed in such a manner that *an action on the secreting activity of the liver-cells*—not on the flow of bile into the intestines—*could alone be examined*. Therefore, it can never be shown by these experiments that mercury does not act as a cholagogue.

The examination we have now concluded of the various doctrines respecting the action of mercury on the liver, has shown us that this substance undoubtedly exerts a cholagogue action, in so far that, by its influence, the flow of bile into the intestinal canal may be increased. It has further shown that there exists some evidence in favour of the doctrines which imply that mercury may increase the formation of bile by a direct and indirect action on the liver, and also by an action in virtue of which various abnormal conditions that interfere with the secreting functions of this organ are removed.

5. *The Action of Mercury in Children.*—Dr. WM. STEPHENSON read before the Medico-Chirurgical Society of Edinburgh (*Edin. Med. Journal*, May, 1871) a paper on this subject, and drew the following conclusions:—

1. That mercury may be employed to influence the constitution with perfect safety, and without any injurious effect upon the general health.

2. That, to obtain its therapeutic action, it is not necessary to produce its

¹ Transactions of the Medical and Physical Society of Bombay, 1841, pp. 3–26.

² Beale's Archives of Med., vol. i. p. 209.

³ British Med. Journ., July 25, 1868, p. 78, and May 8, 1869, p. 411; also Am. Journ. of Med. Sci., July, 1869, p. 231.

visible physiological effects, and that it becomes injurious so soon as these are manifested.

3. That in children its injurious effects are as readily produced as in adults, if not more so, and that such must be looked for, not by its action on the mouth, but in its depressing influence and deterioration of the blood.

4. That it should be used only so far, and with the object of stimulating the nutritive changes of the tissues, not the character of constituents of the blood, and that as such it should be used as a whip or spur only—that is, occasionally, and at intervals, not continuously.

5. That its use in modifying acute inflammatory action is very limited, and requires further observation, but that there is no question as to its power over the products of inflammation, in starting the process of resolution and absorption, where these have been arrested; and that where other remedies fail in producing a change in morbid nutrition, it may succeed in promoting the return to healthy action.

6. That no number of cases improperly treated with mercury, no number of constitutions shattered by its abuse, no number of instances where disease has been cured without it, can in any way invalidate the results of its effects where it has cured when other remedies have failed, or lessen in any measure the position which I here defend of a judicious use of the medicine.

6. *Food Solvents.*—Dr. ARCHER FARR remarks (*Med. Times and Gaz.*, March 18, 1871) that whilst pepsine and pancreatine are so much vaunted as agents concerned in the process of digestion, he desires to point out that there are certain food solvents having an equal claim upon the attention of the physician, and to which he thinks too slight importance has hitherto attached. He refers to the fact that the gastric juice has been shown to be composed of pepsine and an acid constituent, which last may vary in its nature, but upon the proportion present of which the antiseptic properties of the juice appear to depend. To the acid he considers a certain portion of the digestive power of the gastric juice is attributable, and he observes that the various acids that have been found in the gastric juice are all antiscorbutic. Hence he considers such acids to be classed among the most valuable therapeutic agents at the command of the physician, and is of opinion that indigestion may arise almost or quite as frequently from a want of acid as from a deficiency of pepsine in the gastric juice; hence it often occurs that when pepsine alone has failed to relieve dyspepsia, the desired result has attended the exhibition of one of the non-astringent acids. Some years ago Dr. Farr promulgated the view that the prophylactic virtue of lime-juice and other acids depends upon their action as food solvents, and since that time it has occurred to him that an excellent artificial gastric juice might be made by allowing the lime-juice to represent the acid portion. Accordingly he had prepared a mixture of lime-juice and pepsine, which he with others has used with the best results in cases of dyspepsia. Lime-juice, with either pepsine or pancreatine, forms a very elegant preparation, is most convenient for prescribing, and may be made to keep almost any length of time without deteriorating.—*The Practitioner*, May 1871.

7. *Therapeutic Value of Glycerine.*—The dermatologists of the present day, Dr. FANTO remarks (*Allgemeine Wiener Med. Zeitung*, No. 17, 1871), agree in attributing great therapeutic importance to glycerine. They have discarded a large number of internal remedies that were formerly employed as curative agents in cutaneous affections, especially those that played so important a rôle as laxantia, and the so-called purifiers of the blood, and have resorted largely in their stead to local treatment. Glycerine has proved useful in many anomalous affections. Thus, amongst others, it is particularly valuable in cases of abnormal secretion of sebaceous substances. This is caused by disease of the sebaceous glands, and has its seat, not as was formerly supposed in the subcutaneous connective tissue, but in the corium itself. The functions of these glands may be disturbed in various ways; sometimes there is an increase, a hypersecretion of these glands. This affection occurs for the most part in infancy, being amongst the most frequent of the anomalies of that age, when it

is known under the name of *seborrhœa*. It is most commonly seen on the hairy scalp on the face near the ear muscles, more rarely upon the extremities and upon the genitals. For these affections of childhood, glycerine may be prescribed with special advantage. It acts excellently in softening the hardened masses of sebum on the surface of the skin, and in diminishing the irritation of the affected organs. In conjunction with borax, zinc, and acetate of lead, it also diminishes the amount of secretion. In many instances its use must be continued for a considerable period in order to effect a cure. Glycerine proves equally useful in those abnormal conditions of the skin that are characterized by a diminution of the sebaceous secretion, and which in high degrees lead to pityriasis. In this harsh state of the skin, glycerine acts well, restoring, when rubbed into it, its softness and natural elasticity. The anhydrous glycerine should be used in both conditions.—*The Practitioner*, June, 1871.

8. *On Phosphorus as a Remedy in Skin Diseases.*—Dr. BROADBENT read a paper on this subject before the Clinical Society of London. If the action of remedies and poisons on the human organism is due to their chemical properties, substances allied chemically ought to have an analogous physiological and therapeutical influence, or the diversity in their action ought to be explicable on chemical grounds. In other words, chemical groups should form therapeutical groups. The investigation suggested by these considerations is as follows: Given a distinct and well-ascertained physiological or therapeutical effect, can results in any way similar be obtained from the chemical allies of the body producing it? The group of which phosphorus is the head chemically, and of which arsenic is the chief representative in therapeutics, affords an opportunity for the application of this test. Its four members, phosphorus, arsenic, antimony, and bismuth, stand in the order named in regard to equivalent numbers, physical properties, and chemical energy; and their compounds with other elementary bodies form analogous series. Excluding bismuth, which, from its feeble affinities and tendency to form insoluble compounds, may be considered inert, there is in the mode of action of phosphorus, arsenic, and antimony, as poisons, and in the tissue-changes they induce, a parallelism as remarkable as that of the chemical properties of these bodies, both in the energy and in the character of the physiological effects. The opportunity for bringing out further therapeutical parallelism is furnished by the well-known curative action of arsenic in certain forms of skin diseases, such as some forms of eczema and psoriasis. Cases of this kind were taken, and, instead of arsenic, phosphorus was given. Two grains of this substance were dissolved in oil, and from three to seven drops of the solution were given, usually in mucilage, three times a day after meals. Six cases of eczema were related, and in all but one of which the phosphorus was decidedly beneficial. The most striking case was that of a girl, aged 12 years, who had had eczema of the scalp, extending down upon the forehead and face, for three months. She took first four, and afterwards five minims of the phosphorated oil for three months without any external application, when it was discontinued on account of sickness, the eruption having almost disappeared. Three weeks later it was resumed, and after a fortnight all that remained was slight redness and scurfiness of the scalp. With the aid of creasote and red oxide of mercury ointment, the skin ultimately became healthy. The cases of psoriasis were also six in number, two out of which proved rebellious, not only to phosphorus, however, but to arsenic, and all treatment, general and local. In one case, that of a man aged 22, psoriasis had been present more or less from the age of 4 or 5; the patches were large and numerous, and had an inveterate look. He took the solution of phosphorus in doses of from five to eight drops. On two occasions the psoriasis completely disappeared without the use of any local application, and a third time with the aid of creasote and ammonio-chloride of mercury ointment; but his attendance was irregular, and during the twenty-one months that he was more or less under observation, he contracted first gonorrhœa and then syphilis (aphrodisia from phosphorus?), and he ceased to attend at the hospital while the evolution of cutaneous syphilis in a "darts" subject was being watched. The object of the communication was not to bring forward a new remedy for skin diseases, but to exhibit one more

analogy between phosphorus and arsenic. If phosphorus, however, were as manageable and as little disagreeable as arsenic, it would probably, according to Dr. Broadbent's experience, be found superior in efficacy.—*Medical Times and Gaz.*, April 29, 1871.

9. *On the Effect of Iodine in Passive Congestions.*—Dr. J. B. SCHMITT adduces (*Schmidt's Jahrbücher der Gesammten Med.*, Dec. 1870) a number of cases of illness in which he employed iodine with the most satisfactory results. In all these cases passive congestion very probably lay at the foundation of hemorrhage, and this appeared to be the indication for the use of iodine. One of the cases was that of a female, who was chlorotic and suffered from nervous headaches, and whose menses returned every fortnight accompanied by depressing diarrhœa. After all ordinary remedies had been employed without effect for seven years, iodine was given every two hours in the form of pill, and in the dose of six milligrammes (a milligramme is $\frac{1}{10000}$ th of fifteen grains). There was very soon a decided improvement in the symptoms, and the diarrhœa also ceased. The use of the iodine was continued for a considerable time, and the menses returned only every four weeks and the patient was cured. When the inconvenience appeared likely to return it was prevented by the use of the iodine. In other cases of profuse menstruation, Dr. Schmitt employed the remedy with equal success, as also in giddiness, headache, and epistaxis resulting from anæmia. He thinks that small doses are more useful than large ones, a drop of the tincture being a sufficient dose. He found iodine especially serviceable in some cases of diarrhœa which appeared to depend upon paralysis of the ganglionic nerves, and in cholera, the cause of which is, perhaps, to be sought in this lesion. (Reference is made to the experiments of Samuel, who found, after extirpation of the solar plexus, great congestion of blood in the intestinal mucous membrane, and a decidedly increased secretion in the intestines.)—*Brit. and For. Med.-Chir. Rev.*, April, 1871.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

10. *War-typhus and Diarrhœa.*—RUDOLF VIRCHOW, in an article on this subject (*Virchow's Archiv*, Jan. 1871), begins with the statement that the late war has disproved several dogmas which many thought to be established, and one of these is that severe pestilences in armies on the field belong to history. At the beginning of the war this dogma seemed proved, the armies were exceptionally healthy, but when Metz had been invested then there was a change. The region around Metz, as it has been the seat of repeated campaigns, has also been the scene of repeated war pestilences, and, in the present case, already in the middle of October 50,000 had been sent home sick or wounded from before Metz, while at the capitulation 25,000 were found in hospitals inside the city. In previous publications Virchow has shown that in former wars it has been generally exanthematic typhus or our common typhus fever, which has been the pestilence that formed the scourge of armies on the field. But in the case of the American war this general rule was departed from: there it was chiefly typhoid fever, or abdominal typhus, which attacked the armies, and the late war has agreed with the American in this respect, the fever which prevailed in the armies on the field was chiefly typhoid, though in addition there were a few cases of relapsing fever. The discussion as to the distinction between typhoid and typhus fever, or, as the Germans name them, abdominal and exanthematic typhus, is pretty fully gone into, and the essential character of typhoid is made to depend on the infiltration of lymphoid cells into and around the follicles of the intestine and into the mesenteric glands. After such infiltration has taken place resolution may occur, and the disease go through its course without ulceration either in the intestine or in the mesenteric glands. The anatomical

characters of the lesion in dysentery are quite different from those in typhoid fever. Here two kinds of ulceration may occur, the catarrhal and the diphtheritic: in the former there is a simple suppuration of the follicles, followed by a follicular ulcer, while in the latter there is a definite slough of a portion of mucous membrane. These two forms very generally coexist in a case of dysentery, as the catarrhal inflammation is, to a certain extent, always present in the first stage of dysentery. The subject of the etiology of these pestilences is next taken up by the author. He supposes that the first cases of dysentery which occurred previous to the investment of Metz had their origin in alimentary and thermic disturbances, and he lays especial stress on the fact that the soldiers, after being cooped up during a journey extending to hundreds of miles, in good trucks, were often, immediately after, exposed during a prolonged period on the field without shelter. But when dysentery is once established, it soon spreads by contagion. The etiology of typhoid is just as unsatisfactory. It is remarkable that several persons who accompanied "sanitary trains" from Berlin took ill with typhoid after their return, although they had never been exposed to the contagion of typhoid, and had not been placed in any of the conditions which are generally supposed to give origin to typhoid fever spontaneously. Next, as to the etiology of typhus fever, the author is of opinion that it is extremely doubtful whether it ever arises simply from overcrowding. It did not arise in the prisons during the American war, though there was great overcrowding and filth. In Germany, the epidemics of it which occur occasionally seem to have always their origin in the Slavonian provinces. When a war occurs in which the Slavonians are engaged, there are almost sure to be epidemics of typhus; but in the present war two nations in which there is no native typhus were at war, and there was no typhus epidemic. In the Crimean war the French for the first time came in contact with a Slavonian race, and they had an epidemic of typhus, and the French medical men were then for the first time convinced of the actual distinction of the two fevers. It is supposed, therefore, that on the continent typhus comes from the Slaves, just as in Great Britain it seems to come from Ireland.—*Glasgow Med. Journ.*, May, 1871.

11. *Scarlet Fever*.—The materials for the following observations on scarlet fever, recorded by Dr. F. Böxing, in the *Deutsche Klin*, 1870, were obtained during an epidemic of the disease which prevailed in the summer and autumn of the year 1869, in Einbeck, a city presenting all the conditions most favourable for the spread of an infectious disease. The epidemic was remarkable, from the great number of cases of scarlatina which made their appearance simultaneously at the very outbreak; while, during the succeeding eight or ten days, not a single new case made its appearance. After that a number of persons, residing in different parts of the city, were attacked, without any common source of contagion becoming apparent. Dr. B. denies that the disease was propagated invariably by a contagion. He believes that it often sprang up spontaneously. He repeatedly observed that an increase in the number of cases of the disease coincided with an increase in the amount of ozone in the air. As to what concerns the supposition of a specific fungus as the cause of scarlatina, Dr. B., after the most careful investigation, in no case was able to detect other than the ordinary "*leptotrixrechen*," which is not confined to scarlatina, but is common to all diseases attended with a process of cuticular desquamation. Adopting the cryptogamic doctrine of the origin of scarlatina, as held by Hallier, and favoured by Dr. B., the stage of desquamation is to be received as that during which the infectious character of scarlatina is most strongly evinced, as it is then the maturity of the cryptogam is the most complete, and the dispersion of the spores the most to be anticipated. With this theory accords the observation of Dr. B., that from twelve to fourteen days elapsed between the occurrence in the same family of the first and subsequent cases of the disease; now allowing that, according to his experience, the incubation period lasted from six to eight days, it would appear evident, then, that the infection in these latter cases took place during the period of desquamation of the first cases.

The cryptogam (*microccus tilletii*), by which the propagation of the scarlet

fever is effected, is probably taken in with the respired air, as through the lungs it would more readily find a passage into the blood. In the epidemic of scarlatina, during which the observations of Dr. B. were made, the disease, in by far the greater number of cases, attacked children under nine years of age. No patient fell under his notice under one year. In but two or three instances did he meet with it in grown-up persons. No influence was exercised upon either the intensity of the disease or the occurrence of any particular set of symptoms by the age of the patient. The mortality was the least among patients between seven and nine years of age. Death occurred most commonly in the latter stage of the attack, from Bright's disease and its consequences, or from diphtheria. From nine to ten per cent. of the cases terminated fatally. In no instance were there any indications of a prodromal stage. Immediately with an initial chill, the eruption made its appearance upon the neck, in the form of small red points; followed by pain in the forehead, vomiting, præcordial anxiety, pain of the limbs, etc., attended with a rapid augmentation of temperature, often amounting to 42.5° , in one case to 43.3° , C. This rapid occurrence of intense heat of the surface is pathognomonic of scarlatina. It lasts from six to eight hours, when it falls some 2° , and in favourable cases on the second day the fever assumes a marked remittent character. In cases, however, with unfavourable complications, such as diphtheritis, inflammatory affections of the chest, or croupous nephritis, there occurs no morning remission. Evening exacerbations occur, even in those cases which run an entirely normal course, as late as the third or fourth week. A sudden augmentation of temperature is not of itself to be received as indicative of the occurrence of some complication; but, if it be not succeeded by speedy defervescence, the occurrence of some complication is to be suspected. When an affection of the kidneys sets in without any increase of temperature, it furnishes no cause for an unfavourable prognosis. In regard to the eruption, Dr. B. had nothing especial to remark. Its intensity bore no relationship to the intensity of the attack, nor the extent of the subsequent desquamation. In some cases, when the skin presented an unusually large number of sebaceous follicles, this seemed to exercise some influence upon the extent of the exfoliation. The so-called anomalies of innervation, Dr. B. considers to be in part the result of excessive increase of temperature, and partly depend upon the accumulation of the scarlatinal poison in the blood. A phenomenon, often observed in very intense cases of the disease, is a high degree of dyspnoea of many hours' continuance, the result of an irritation excited in the medulla oblongata by the scarlatinal poison. Angina, differing in intensity in different cases, from a superficial erythematous inflammation of the mucous membrane of the fauces to the most severe diphtheritic condition, was invariably present. It was seldom that the diphtheritic deposit extended from the fauces into the larynx, nor was its presence attended by paresis; it often, however, extended to the nares, as well as into the middle chamber of the ear. There was almost invariably tumefaction of the glands at the angle of the lower jaw, which terminated mostly in resolution. In a very few malignant cases, there took place extensive, diffused suppuration and sloughing of the cellular tissue of the neck.

The treatment of the disease was expectant. Cool chambers for the patient, say of a temperature from 11 to 12° R.; cold sponging of the surface; when the so-called cerebral symptoms occur, ice to the head and quinia internally. For diphtheritic complication quinia internally, with gargle of solution of borax, or of aqua calcis. When disease of the larynx is present, Dr. B. is opposed to tracheotomy. He denies that affections of the kidneys are to be viewed as the sequelæ of scarlatina. On the very first appearance of the eruption on the surface he has detected in the urine blood-corpuscles, masses of conglomerated epithelial scales, as well as albumen. Kidney disease he considers to be, in fact, a constant attendant on scarlet fever.

Dr. B. remarks, in conclusion, that most of the cases of scarlet fever which fell under his notice in the epidemic referred to, were of a light character. Some very severe cases, it is true, occurred of extensive croupal nephritis, which, nevertheless, seldom passed into chronic parenchymatous nephritis. There is hope of a favourable termination of these nephritic complications, when, as is often the case, only one kidney is affected, and then, when the

tubulis contortis is unaffected, and consequently the secretory function of the organ is unimpaired. The free secretion of urine by the tubulis contortis may possibly, by *vis a tergo*, free the tubuli recti from any cylindrical formations. An anticipatory excitation of diuresis is, therefore, desirable. To promote a return to the healthful condition, in cases of parenchymatous nephritis, nitric acid has been very highly spoken of. D. F. C.

12. *Roseola Variolosa*.—Dr. DUFFIN read before the Clinical Society of London (*Medical Times and Gaz.*, April 1, 1871) notes of two cases of roseola variolosa that had come under his notice. In the first, some six hours after a severe rigor, a thickly-set, papular rash appeared. It was strictly confined to the surface of the abdomen and the inside of the thighs, thus occupying a triangular space, with its base upwards. The rash blanched on pressure. The patient presented the signs of severe febrile disturbance. After forty-eight hours the eruption became purpuric, and at the end of an additional twenty-four hours, uniformly confluent. The regular papules of smallpox then appeared on the face. The patient had two imperfect vaccine marks on his arm. The case ran a moderately severe course up to the period of the secondary fever, when the disease aborted. In the second case, a papular rash, in all respects similar to the other, appeared on the arms and thighs of a girl twenty-four hours after severe rigors. The rash here also became purpuric on the third day, and on the fourth a modified smallpox eruption occupied the face. This patient also had been vaccinated. In reliance on the descriptions of Hebra and Trousseau, Dr. Duffin contended that where these limited rashes occurred they were pathognomonic of the appearance of smallpox, the diagnosis of which would be much accelerated. In vaccinated subjects they had little prognostic importance, but in the unvaccinated they were extremely formidable. No proper smallpox rash seemed to invade the purpuric area, which gradually faded as the disease evolved.

Dr. FAGGE confirmed the accuracy of Dr. Duffin's description. He saw a patient some time ago with the rash, and next day there were papules of smallpox. A man came into hospital with purpuric blotches, and passing blood. He died, as Dr. Wilks thought, from smallpox; but he had been ill over forty-eight hours, and there were no papules. Nevertheless, twelve days thereafter several patients in the same ward and the ward clerk were attacked with true smallpox, there having been no other case in the ward.

Dr. BROADBENT had altogether seen eight cases like those mentioned by Dr. Fagge. The first exactly resembled a case of scarlatina, but was rather deeper in tint. There were slight throat symptoms; hemorrhage followed, and the patient died. There were no papules, though life was prolonged to the fourth day. The rash had been more or less general in all he had seen. With the eruption there had been a period of absolute comfort. Hemorrhage had come on, and death followed.

13. *Local Applications in Variola*.—At a late meeting of the Société de Thérapentique, M. DELIOU stated (*Gazette Méd. de Paris*, No. 12, 1871) that the plan which he had found to succeed best was the application of a mixture of collodion and castor oil with the addition of 1-100th of bichloride of mercury. M. FÉREOL stated he was of opinion that this application was useful in confluent varioloid, but that it was of no value in true variola when confluent. M. Deliou, however, held in reply that it had proved equally satisfactory in both forms.—*The Practitioner*, May, 1871.

14. *Clinical Experience of Chorea*.—Prof. STEINER gives the results of his observation of fifty-two cases of chorea treated in the children's hospital at Prague. Of this number, three cases were fatal. The first was a boy of 8½ years, who was seized with chorea, after falling down a cellar step, and the autopsy pointed to a growth of cellular tissue in the substance of the spinal marrow as the probable cause of the disease. Chorea came on in the second case, a little girl of 9 years old, a few days after she had been playing, and with back to back and hands over her head had been swinging her companion. She

died, and an abundant extravasation of serous fluid into the spinal cord, with hyperæmia of the cord and its meninges, was found after death—changes which appeared to be the result of her violent exertion, and the cause of the chorea. This conclusion was confirmed by four other similar cases resulting from the same cause, which recovered. *In the third case*, a boy 6 years old, it was proved that the chorea was the expression of an inflammatory exudation into the spinal canal, following an attack of articular rheumatism with consecutive peri- and endocarditis. The patient was improving, when sudden serous effusion into both pleuræ with acute œdema of the lungs supervened. Out of 252 cases the author has only seen four cases occur *in the course of acute articular rheumatism*. He regards the frequent coincidence of the two diseases in France as due to some local influences, but comes to the conclusion that acute rheumatism, with or without endocarditis, may cause chorea *in a certain number of cases*. He does not agree with those French authors who look upon acute rheumatism and chorea as but one disease expressing itself in a twofold way, though it is easy to see the connection between the two diseases. Its clinical course, no less than its anatomical appearances, proves that acute rheumatism has a great tendency to affect the serous membranes, and in certain cases the disease localizes itself not only in the joints, but also in the spinal membranes, the irritation of which produces the symptoms of chorea. In other cases the author considers chorea to depend essentially upon *a disturbed nutrition and an increased excitation of the spinal marrow*. The cause of this spinal irritation is, in the majority of cases, anæmia and a faulty condition of the blood, a conclusion borne out by the consideration of the following facts:—

1. Children who suffer from chorea have generally grown rapidly; are of tender build; weakly; anæmic.
2. Certain acute infectious diseases—viz., scarlet fever, measles, typhus—often cut short the chorea altogether, or temporarily.
3. A nutritious diet and tonics have a beneficial influence upon the disease.
4. Blowing murmurs are audible over the heart and in the veins, which disappear as the patient improves.

This condition of anæmia is frequently associated with irregularities of growth and development. Chorea generally occurs between the ages of 5 and 11 years, or during the period in which the teeth and the sexual organs become developed, and in many cases might be called, the author thinks, a disease of development.

In a smaller number of cases, the spinal irritation seems to arise from changes in the spinal cord and its membranes; as, for instance, in the case related above, in which a growth of cellular tissue was found in the substance of the cord. It is possible that in many cases similar recent growths have been present without being discovered; hence, a thorough microscopical examination of the spinal cord is most essential to the right understanding of the true nature of chorea. The growth may be small, circumscribed, or diffuse; may cause slight or serious mechanical irritation; and the symptoms vary accordingly. In short, the author regards chorea as an irritation of the spinal cord, induced and maintained (1) by anæmia, (2) hyperæmia, (3) serous and hemorrhagic exudations, (4) by new growth and organic changes in the region of the spinal marrow and its membranes. This spinal irritation may have a traumatic or a rheumatic origin, or may result, as above, from some anomalous conditions of development and growth. The author therefore classes chorea amongst affections of the spinal cord.

The course of chorea is generally chronic. He has only seen one acute fatal case. In some instances chorea has been cut short by the supervention of one of the acute infectious diseases. In a little girl, 6 years old, a severe attack of scarlet fever cut short the chorea, which never returned. In another case, an attack of measles cured chorea of long standing; it returned, however, after the measles had left, but in a milder form. Chorea often returns. Of fifty-two cases, the author saw it return in five children *twice*, in one child *three* times, in two children *four* times; the interval varied from four months to two years.

With regard to treatment, on the principle that chorea is, in the majority of cases, associated with anæmia, he gives iron alone, or in combination with nervine tonics, as zinci oxyd. If it be associated with rheumatism, he gives quinia and digitalis, but the most successful remedy in his hands has been

Fowler's tincture, which he has rarely found fail, especially if iron be given first. The largest dose in one day was eight drops, but he begins with a dose of one drop, and gradually increases it. Its use is not continued after fourteen days, if no benefit results. He also uses cold water in many cases, in the shape of wet sheets.—*Med. Times and Gaz.*, April 8, 1871.

15. *A Peculiar Form of Paralysis in Children from Cerebral Softening occurring in Patches.*—Dr. TH. SIMON, of Hamburg, gives the details of three cases of this which occurred in the same family, in a boy of 4, a girl of 3, and a boy of $1\frac{3}{4}$ years of age. The course, so far as developed, was similar in the whole three cases, and a short description of the chief symptoms may give an idea of the disease. In all the cases rickets existed, and, as regards the central nervous system, there were observed certain disturbances of the mental faculties, chiefly manifested in deficiency of memory and of speech; the boy of 4 years, for instance, was scarcely so far advanced as an ordinary child of 2. There was also a considerable degree of paralysis of motion in the extremities, so that the children, after being able to walk, lost this power; yet sensibility did not seem to be affected, and the muscles contracted readily to electro-motor stimulation. In all the cases the disease developed itself slowly during the second year, so that in the case of the youngest child it was seen in its earlier stage. In the two elder children the affection got gradually worse, and peculiar soporific attacks supervened, which ended fatally in the case of the girl. In this fatal case the brain and cord were examined, and very large patches of softening were found, especially on the left cerebral hemisphere, while smaller patches of a similar nature existed on the right. To these three fully developed cases the author adds the case of a child only $2\frac{3}{4}$ months old, in which numerous small patches of softening were found on both hemispheres; and he supposes that, had this patient lived, the case would have developed as the three already described, while he further supposes that in the three first cases there may have been patches of softening from birth, but that they showed progressive increase from the beginning of the second year onwards.—*Glasgow Med. Journ.*, May, 1871, from *Virchow's Archiv*, Jan. 1871.

16. *Diphtheria of the Throat.*—Dr. A. CLASSEN, of Rostock, considers (*Virchow's Archiv*, Feb. 1871) that diphtheria is primarily a local disease, and that it depends on a fungus which penetrates into the epithelial cells of the mucous membrane. The result of this penetration of the epithelial cells by the fungus is a greatly increased growth of epithelium, so that layers on layers of such cells are produced, and, at the same time, white and red blood-corpuscles pass from the vessels and mix with the diseased part. The exudation in diphtheria he considers to be composed chiefly of the changed epithelial cells and blood and pus corpuscles. The fungus he has detected in the very substance of the epithelial cells, and, as it is extremely minute, he supposes that it passes from the affected membrane into the bloodvessels, and there produces the constitutional symptoms, which are thus secondary to the primary affection of the mucous membrane. The presence of the fungus in the mucous membrane leads to irritation and inflammation of it, and the inflammation has the usual results; and as it is generally severe, it is commonly followed by sloughing of the mucous membrane. The author distinguishes diphtheria from croup on the one hand clinically, but on the other hand more absolutely on the ground of the presence of this fungus in diphtheria. In the early stages of diphtheria you may have only a false membrane on the surface of the mucous membrane, but this has its origin in the irritation produced by the fungus; whereas in croup there is always a simple inflammation, which is not generally so severe as that which occurs in diphtheria, and the mucous membrane is not generally involved in the exudation. In diphtheria the constitutional disturbance is greater than in croup, this being a natural result from the fungus passing into the blood. The alteration in the constitution of the blood effected by this fungus is considered to produce a tendency to hemorrhage, and the paralysis which is one of the common results of diphtheria is ascribed to hemorrhage into the sheaths of the nerves. To the same cause he ascribes the difficulty of hearing and seeing

which sometimes ensues, and supposes that when hemorrhage has occurred a slight inflammation is set up as a consequence, and that the function of the nerve is thus interfered with. A case is described where there was some loss of sight, and ophthalmoscopic examination showed the presence of a slight degree of neuro-retinitis, and this the author ascribes to the inflammation resulting from hemorrhage into the optic nerve near its origin. In respect to therapeutics, the author, considering the disease to be primarily a local one, and this local affection depending on a foreign organism, looks on the destruction of the latter as the most obvious indication. Practitioners have come, as a rule, to use local applications to cases of diphtheria, without any definite idea as to the disease being fundamentally local. The author has used various local applications, and here gives the result of his experience: Nitrate of silver, in solution or solid, is not advisable, as its action is too superficial; the solution of the perchloride of iron is useful in slight cases; but he considers that the mild acids are the best agents. He has used diluted lactic acid, which he paints on to the part; also citric acid, in the form of lemons, which were sucked in large quantities, sometimes to the number of seventy in the twenty-four hours. The acid he has found most reliable, however, is sulphurous acid, and this he administers in the form of dry powdered sulphur (flowers of sulphur) blown on to the part, or suspended in water and used as a gargle. The grains of sulphur adhere to the mucous membrane, and by their gradual oxidation form a continual store of sulphurous acid. The constitutional treatment was varied according to the cases; in some cases leeches were used; and, where the exudation was extremely extensive, mercury was given in the form of mercurial inunction. Quinia and iron were most useful in convalescence. Latterly, he has given crystallized carbolic acid, with a view to its attacking the fungus in the blood, and he thinks he has seen great benefit derived from its use.—*Glasgow Med. Journ.*, May, 1871.

17. *Treatment of Diphtheritis*.—Dr. STEINER, in the *Jahrb. f. Kinderheil.* (N. F. iv., 1870), after some preliminary remarks in relation to the pathology of diphtheritis, from which he comes to the conclusion that the question, whether it is to be viewed as a blood disease or one entirely local in its character, is still an unsettled one, he details the results of his experience in respect to its therapeutical management. In the course of these details, it leaks out that he is inclined to accept the doctrine of the parasitic origin of diphtheria. In consequence, he speaks only of chlorate of potash and quinia as internal remedies, under certain circumstances, which, altogether independent of the true character of the actual malady, would call for their employment in any case of disease. His main dependence is on local remedies, applied in the form of gargling, inhalation, pencilling, or strewing. The following are briefly commented on by him:—

1. *Aqua Calcis*.—Lime-water was applied to the fauces in fourteen cases; of these nine had a favourable termination, and in five death took place. The solvent action upon the diphtheritic deposit was especially favourable; under its use, by the end of from six to eight hours, it would in great part or entirely disappear; the lime-water in no degree, however, impeded the recurrence of the deposit, nor had it the power to limit the disease to the fauces, and thus to guard against the danger incident to its spread into the larynx and trachea.

2. *Acidum Lacticum*.—The solvent properties of the lactic acid in cases of diphtheritic deposit were first pointed out by Weber (*Cbl.* 1869, 340). He employed it in the form of inhalation (fifteen to twenty drops to an ounce of water). The results from its use by Dr. S. were of the same unsatisfactory character as in the case of lime-water. Of seven cases in which it was used, three recovered and four died. To the lactic acid must be conceded the power of dissolving the diphtheritic deposits, but, in common with all the other remedies, it exerts no power in limiting the spread of the deposit beyond the fauces.

3. *Ferrum Sesquichloratum*.—(Applied by means of a pencil.) By the chlorate of iron the solution and removal of the diphtheritic patches does not appear to be so speedily effected as by either of the preceding articles. Finally, however, it accomplishes the removal of the crust, thus bringing sesquichlorate in immediate contact with the denuded mucous membrane; the latter, under its

action, is improved in appearance, and speedily restored to its normal condition. In four cases the remedy was employed, of these two got well and two died.

4. *Spiritus Vini*.—(Applied with a pencil to the fauces, and at the same time, in a poultice, to the neck.) The influence of the spirits of wine upon the diphtheritic deposit was not very striking. Of three children, in one family, treated with it, one died, and two got well.

5. *Sulphur Sublimatum*.—Dr. S. agrees with Dr. Hauner, that the accidental action exercised by the flowers of sulphur in cases of diphtheria, is dependent upon the slight development, which occurs in some samples of it, of sulphurous acid, causing it to act as a gentle caustic. The sublimed sulphur is drawn into the fauces, every three or four hours, by insufflation. Under its use, two slight cases got well, a third, more severe case, terminated fatally.

From his experience thus far, Dr. S. infers that a favourable termination may be expected in slight cases of diphtheria under the use of either of the above remedies, while, under them all, death will ensue in severe cases. Neither of them has the power to prevent the extension of the diphtheritic deposit beyond the fauces. The one most to be depended upon, from its unquestionable power as a solvent of the membraniform deposit, is the *aqua calcis*.

The treatment of diphtheria pursued by Dr. S. consists in the local application of lime-water, and, internally, the administration of chlorate of potassa, quinia, and wine. When laryngitis sets in, a resort to emetics, and when asphyxia is threatened, to tracheotomy.—*Centblt. f. d. Medicinisch. Wisschn.*, No. 56, 1870. D. F. C.

18. *Experimental Contributions on Pulmonary Hemorrhage*, by Drs. L. PERL and H. LHMANN, of Berlin.—It is asserted by Niemeyer, in his work on "Phthisis," that one of the causes which, by a direct irritant action on the lung-tissue, tend to produce phthisis, is the blood which remains after hæmoptysis, and which coagulates in the bronchi and lung-alveoli. He supposes that hæmoptysis may precede an attack of phthisis, and the blood acting as an irritant lead to pneumonia and consequent cheesy metamorphosis. This doctrine has already, before Niemeyer, been held and opposed by many, and the present authors have attempted a solution of it by experimental means. The results of a series of experiments on dogs and rabbits are given, in which blood was introduced directly from a vein in the neck into the trachea, it having been previously opened by a small incision. The first fact brought out by these experiments is that in hemorrhage into the bronchi, the blood is sucked into the finest bronchi and alveoli of the lung, so that, even twelve hours after a very extensive hemorrhage, no trace of blood-clot could be found in the larger bronchi. This agrees with an observation made by Traube, that in the lungs of persons who have had hæmoptysis during life, it is very rare for appreciable clots to be discovered, and that they are only found when death has ensued from suffocation during the hæmoptysis. These experiments further showed that blood passing into the sound lung does not of itself act as an irritant, does not produce inflammation, but is, on the contrary, gradually absorbed, without producing any noticeable change except a moderate emphysema. It is, in addition, possible that the blood pigment may produce pigmentation of the epithelium of the alveoli of the lung.—*Glasgow Med. Journ.*, May, 1871, from *Virchow's Archiv*, Dec. 1870.

19. *Mediastinal Tumours*.—Dr. FRANTZ RIEGEL contributes (*Virchow's Archiv*, Band xlix., Heft 2) an elaborate paper on the diagnosis and pathology of tumours of the mediastinum, and details an interesting case which was observed in the hospital at Würzburg.

Of 42 cases collected by Riegel, in which the nature of the tumours was ascertained, 33 were cancerous or sarcomatous, 4 fibroid, and 5 dermoid cysts. Virchow is of opinion that many of these tumours take their origin in a persistent thymus gland; others probably spring from mediastinal or bronchial glands, from glands in the root of the lung, from areolar tissue in the outer coat of the great vessels. Of carcinomatous tumours, medullary cancer is the most frequent.

Mediastinal tumours are met with oftener in the male than in the female sex. They occur most frequently in persons between 20 and 30 years. They may present no symptoms whatever for a long period, and when at length they appear the disease may make extremely rapid progress, and lead within a very short period to a fatal issue. In a case described by Jaccoud, the patient did not complain of anything till eight days before death took place. More commonly, however, the symptoms are developed gradually. Mediastinal tumours may grow upwards towards the neck, or forwards so as to destroy the sternum and ribs. In the majority of cases they grow inwards, compressing the lungs, the heart, the vessels and nerves towards the vertebral column. Very often a bulging will be observed in the thoracic wall corresponding to the tumour. When the tumour attains some magnitude, a want of symmetry in the sides of the chest becomes manifest. Pulsation is sometimes observed in the bulging part. The respiration is accelerated, its type varying with the size and situation of the tumour. Percussion establishes the presence of dulness and increased resistance when the tumour is situated near the thoracic wall. The vocal fremitus is usually diminished, but in the case of solid homogeneous tumours may be increased. Mensuration usually reveals the existence of a difference between the sides of the chest. For the most part no respiratory sounds are to be heard over the tumour, but weak or bronchial breathing may be audible.

In the progress of tumours effusions commonly take place into the pleural cavity and into the pericardium. The cardiac impulse is weakened, the sounds less intense, and the organ itself is often displaced. The superior cava is often compressed, with consequent dilatation of its tributaries and cedema of the face and upper extremities. Arteries offer greater resistance to pressure, but they become narrowed with consequent inequality of the radial pulses. Enlargement of the thyroid with some degree of exophthalmus have been observed, although rarely.

The trachea, the larger bronchi, sometimes undergo compression, the œsophagus also, causing dysphagia, the vagus and recurrent nerves with dyspnoea, alteration of the voice, or even although rarely aphonia. Pain to a greater or less extent is generally present. Enlargement of the axillary, or supra-clavicular glands, is also a sign of some value as establishing a probability of a malignant character of the intra-thoracic tumour. With the progress of the disease dyspnoea becomes more considerable; cough and expectoration are observed, and pain referred to the arm, neck, or back, or intercostal neuralgia may be present.

On the subject of the diagnosis of mediastinal tumours Professor Skoda¹ has contributed some observations.

The tumour is probably malignant, if the patient is old and cachectic, and if the glands in the neighbourhood of the sterno-mastoid or in the axilla are enlarged. Considerable and extensive interference with the function of the organs in the thoracic cavity point in the same direction, although these may also be to a great extent perverted by mere pressure or displacement.

Non-malignant growths are less common, and are slower in producing disturbance of the system at large. Pulsation may be noticed when the tumour is seated on an artery, or may be propagated from the heart. The non-expansive character of the pulsation and the usual absence of bruit serve to distinguish tumours from aneurism; but it is often a matter of difficulty to establish the diagnosis. Pericardial exudation may be mistaken for mediastinal tumour. Acute pericarditis, however, is accompanied by fever, and occurs in connection with some general disease, as acute rheumatism, Bright's disease, &c. Chronic effusion into the pericardium is also secondary to other affections.

Pleuritic effusion resembles some mediastinal tumours in producing bulging of the chest, dulness on percussion, diminution or absence of the respiratory sounds, &c. The differential diagnosis becomes especially difficult when effusion in the pleura coexists with tumour. If the tumour is connected with

¹ Allg. Wien. Med. Zeitung, No. 20 et seq., 1870. Prager Vierteljahrschrift, 1871, Band 1.

leucocythemia there is generally sufficient evidence elsewhere of the implication of the glandular system.—*Dublin Quart. Journ. of Med. Sci.*, May, 1871.

20. *Intra-pericardial Aneurism of Aorta*.—Dr. STOKES, Regius Professor of Physic in the University of Dublin, presented to the Pathological Society of Dublin (*Brit. Med. Journ.*, March 18, 1871) a most interesting case illustrative of some obscure points in the diagnosis of cardiac disease. The patient was a man aged 31, who six years ago was admitted to the Meath Hospital, suffering from "heart disease," most probably from pericarditis. At the time of his second admission, a short time ago, he was the subject of general anasarca. On physical examination, the liver was found to be much enlarged, its lower edge being felt just above the crest of the ilium. But the most striking physical signs were met with in connection with the heart. At its base a double murmur was audible, of which the first part was systolic, and the second corresponded with the diastole. This bruit became fainter when traced towards the apex, but at this point it was again distinctly heard. Besides the double basic murmur, a loud *frémissement* existed at the base. This sign disappeared at a subsequent period, but only to return. There was visible pulsation in the carotid alone, and the pulse partook to some extent of the characters of the collapsing form. Here then were all the usual signs of aortic patency, together with the basic *frémissement*, and a second double murmur at the apex. Dr. Hayden, who was asked by Dr. Stokes to see the case, suggested that the lesion was aneurism of the right ventricle. After death the left ventricle proved to be much hypertrophied, the aortic valves were found perfectly competent, though somewhat thickened; and a true aneurism sprang just above the origin of the aorta. The tumour was intrapericardial, and from the sac a fistulous passage led into the cavity of the right ventricle. There was, in fact, a varicose aneurism. The *frémissement* was now explained—its disappearance Dr. Stokes regarded as due to a temporary plugging of the fistulous openings. Cyanosis was never present, though before death the patient's aspect became unusually livid. Dr. Stokes mentioned that this was the second instance in his experience in which an aneurism springing in the neighbourhood of the sinuses of Valsalva had perfectly simulated the comparatively common disease, permanent patency of the aortic valves. Dr. Hayden stated that his diagnosis was founded on the following considerations. First, the murmur of exit possessed a peculiar character, one never remarked in simple valvular disease. It resembled the sound caused by the entrance of fluid into a resounding cavity, and might best be described by the word "splashing." Secondly, this murmur was not transmitted into the carotid vessels.

21. *Chloride of Ammonium in the Treatment of Hepatitis and Abscess of the Liver*.—Dr. STEWART, of the Royal British Fusiliers, observes (*British Burma Press*, Rangoon, 1870) that this drug has been for some time employed and valued by the Germans and the French in the treatment of diseases in which mercury and other alterative decoctions are indicated, yet he has never found the salt particularly mentioned in relation to the treatment of hepatitis and abscess of the liver. After numerous and careful trials he now recommends the drug almost as a specific in such cases, and he states, moreover, that he has found it very serviceable in all cases of hepatic disease whatever, whether depending on organic disease or on functional derangement. The proper period for the exhibition of the remedy is after the abatement of acute symptoms, and when diaphoresis has been freely established, and it should then be administered in doses of twenty grains night and morning. About fifteen minutes after the chloride has been taken a sensation of warmth is experienced at the epigastrium, which gradually spreads over the whole surface of the skin. The patient at the same time says that he feels "light-headed." In cases of hepatitis the pain is either removed to a point higher up than the liver or is entirely relieved. Dr. Stewart gives a history of a number of cases, and shows that, during a nine months' trial of the salt, out of a total of thirty-one, not one was followed by a fatal result. He also highly recommends the chloride in cases of chronic dysentery, and advises the continuance of its administration for some time after the disappearance of acute symptoms.—*Brit. and For. Med.-Chir. Review*, April, 1871.

22. *Iodide of Potassium in the Second Stage of Bright's Disease*.—Dr. CRÉQUI, of Brussels, has employed this remedy with great success in the second—i.e. the parenchymatous—stage of this complaint, and explains the failures of other practitioners by the small doses they ordered. Dr. Créqui begins with six grains a day, and gradually ascends to six drachms, or half an ounce, per diem. To secure the toleration of the salt he adds a little opium, or some subnitrate of bismuth. Several Italian medical men have used the iodide in a similar manner with good results; some cases, however, ended fatally. It is supposed that the iodide of potassium has the power of limiting the morbid secretions of the connective tissue which occurs round the Malpighian bodies in parenchymatous nephritis.—*Lancet*, March 25, 1871.

23. *Lardaceous Disease*.—The committee (which consisted of Dr. William Marceet, Dr. Samuel Wilks, Dr. T. S. Bristowe, Dr. J. Andrew, and Dr. W. Howship Dickinson) recently appointed by the Pathological Society of London, to consider the subject of lardaceous or amyloid disease, reported as follows:—

“The Committee, in presenting their report, think it right to state that it comprises the fruit of much time, labour, and expense. The analyses by Dr. Marceet, in connection with the report, show that the organs which have been examined as presenting the alterations in question, are considerably deficient in potash and phosphoric acid, while they contain an increase of soda, chlorine, and cholesterine. Where the tissue is extensively affected, it is rendered much less soluble in water than in its normal condition, the insoluble portion, which is nitrogenous, being readily soluble in potash. When iodine is brought into contact with the affected structure it enters into combination with a peculiar nitrogenous substance, by which the tissue is pervaded, and produces the reddish-brown reaction familiarly recognized as the test of the morbid change. When the lardaceous change is incomplete, the nitrogenous material which gives the reaction can be extracted by water. Both the iodine reaction and the substance to which it is due have been carefully investigated, together with the relationship existing between this substance and a solution of fibrin in dilute hydrochloric acid. In reference to the name which should be applied to this morbid condition, the Committee, after due deliberation, suggest that the term *lardaceous* should be adopted by the Society. This term, they believe, is widely used and well understood in the sense to which they desire to restrict it; but they, nevertheless, think it proper to insist that the word be explicitly limited to organs so altered as to present the chemical characteristics described in the report, the most obvious of which is the reddish-brown reaction with iodine.”—*Med. Times and Gaz.*, June 3, 1871.

In connection with this report, it will be remembered that in 1867 Dr. Dickinson pointed out¹ the frequent occurrence of this disease in cases attended with profuse suppuration, by which process, he supposed, the blood was drained of alkali; the lardaceous deposit he regarded as dealcalized fibrin, and found by analysis that the organs containing this deposit yield a diminished proportion of the alkalies. Dr. Dickinson, with a view of preventing the disease, recommends the administration of potash in cases of chronic suppuration.

24. *On Xanthelasma Palpebrarum, and its Significance as a Symptom*.—Mr. JONATHAN HUTCHINSON read a very interesting paper on this subject before the Royal Medical and Chirurgical Society. He stated that his paper concerned the buff or yellow patches not very unfrequently seen near the inner angles of the eyelids, which had been described by Dr. Addison under the name *Vitiligoidea plana*, and which had been accurately figured by Mr. Wilson, Hebra, and several other authorities. He preferred Mr. Wilson's name because it had reference simply to the very conspicuous colour of the patches, and to their location; and because it involved no suggestion of similarity or relationship to any other malady. For some years the author had been engaged in collecting facts as to the clinical meaning of these curious patches, in the hope of finding that their presence might furnish a clue to their possessor's diathesis or state

¹ See *American Journal of the Medical Sciences*, April, 1868, pp. 465 and 491.

of health. More especially he had wished to investigate the correctness of Dr. Addison's belief (founded on but very few cases) that they were usually associated with disease of the liver. The paper was based upon the narrative of about thirty cases and was illustrated by a series of coloured drawings. The chief conclusions arrived at are summed up in the following propositions:—

1. That xanthelasma never occurs in children; whilst it is fairly common in middle and senile periods of life.

2. That, in a large majority of cases, its subject is not seriously ill, nor in any danger of becoming so.

3. That, in a small proportion of very severe cases, jaundice, with great enlargement of the liver, is met with.

4. That, when jaundice occurs, it almost always precedes the xanthelasmic patches.

5. That the form of jaundice is peculiar, the skin becoming of an olive-brown or almost black tint, rather than yellow, and the colour being remarkable for its long persistence.

6. That the enlargement of the liver may be very great, and that it may subside, and the patient regain good health.

7. That in many cases in which there has been no jaundice, there is yet the history of frequent and severe attacks of functional disturbance of the liver.

8. That xanthelasma occurs more frequently in females than in males, the proportion being two to one.

9. That in all cases the xanthelasmic patches appear in the eyelids first: and that not in more than about 8 per cent. do they ever extend to other parts.

10. That the patches invariably begin near the *inner* canthus, and almost invariably on the *left* side.

11. That xanthelasmic patches are of little value for purposes of prognosis, being usually the evidences of past rather than of coming disease.

12. That it seems not improbable that they may result from any cause which has induced repeated changes in the nutrition, and especially in the pigmentation of the skin of the eyelids. Thus they occur to those who have been liable to have dark areolæ round the eyes, whether from "sick headaches," ovarian disturbance, nervous fatigue, pregnancy, or from any other cause. Hence their frequency in "bilious subjects," and in the female sex.

13. That it is probable that of the causes mentioned under which the pigmentation of the eyelids may be disturbed, disorder of the liver is the most powerful; hence the fact that the more extensive cases are usually associated with hepatic disease.

The author stated, amongst other points, that when these patches are seen on the eyelids, it is usually safe to suggest that their possessor has been the subject, at some period of life, of very severe and frequent sick headaches, and that in two-thirds of the cases this suggestion would be confirmed. He added that he had met with some cases in which some of the less usual evidences of disturbance of the nervous system in connection with sick headaches had also been observed. In one instance, a man had been liable during his headaches to become temporarily quite blind of one eye, and now and then of both; and another, a woman, was liable to sudden loss of muscular power in her arms. Two cases were related of great enlargement of the liver, with "black jaundice," both of which disappeared after a while. In one of these the patient became insane during the jaundice, but recovered afterwards, and is now well, but with large patches of xanthelasma.

As regards the pathological anatomy of the patches, the author preferred to reserve his facts, which were as yet incomplete. He showed drawings, however, to illustrate the important fact, not previously noticed, that the patches sometimes show evidence of other changes in the skin besides the accumulation of yellow material. Thus it is not uncommon for sebaceous glands to become much enlarged, and plugged by pellets of indurated secretion, blackened at the free extremity; and in one instance a number of large thin-walled serous cysts were developed. In these rarer forms of the malady, its real nature is usually disclosed by the presence of some small spots of the characteristic buff tint. It is also recognizable from the fact that, whether the disease be cystic or

sebaceous, the morbid conditions are arranged above and below the inner canthus, in what may, for convenience, be styled the *xanthelasmic positions*. Like xanthelasma in its more typical forms, they are also after a time accurately symmetrical.

Dr. HILTON FAGGE said that in his cases there was no evidence of disease of the liver. In one instance the condition had been hereditary for four generations. It was impossible to draw the line between plain and tuberos vilitigoidea. In Dr. Pavy's case both varieties were present. In her, the spots began on the hands before appearing on the face. The jaundice, he had said, was light, not dark. The dark spots were on the mucous membranes.—*Lancet*, March 25, 1871.

25. *Acute, Contagious, Non-febrile Pemphigus, in New-born and Quite Young Infants*.—HEBRA had early disputed the existence of an acute pemphigus. Bärensprung insisted upon the development of pemphigus out of the herpes versicolor. Many authorities of the present time recognize only a syphilitic and cachectic pemphigus. The most part contest its contagious character. The following observations of Drs. OLSHAUSEN and MEKUS are presented as having a bearing upon the true character of pemphigus. (*Arch. f. Gynecology*, 1870.) On the 2d March, 1864, in the lying-in establishment at Halle, a five days old infant was attacked with pemphigus. There was no appearance of the least disturbance of the general well-being of the little patient. At the end of some five days, the infant and mother left the institution. On the 3d of March pemphigus appeared on the persons of two other infants, who had not been in the chamber occupied by the first. These, also, their vesicles still remaining, at the end of a few days left the institution. On the 5th of April four other infants were attacked, and on the 16th of April two more. In all these six cases, the symptoms and course of the disease were identical. The infants were healthy, strong, and vigorous, and the mothers without a trace of lues. The vesicular eruptions were neither large in size nor numerous—3 mm. in diameter, and sometimes only twelve on the entire body—mostly seated on the trunk. Drs. O. and M. remark, that the first three infants appear to have been infected by the same unknown cause, perhaps by the use in common of the same bathing utensil and sponge. The eruption made its appearance regularly on the fifth or seventh day *post partum*, which is, perhaps, its common period of incubation.

In the year 1869, pemphigus prevailed epidemically in the city of Halle; hundreds of infants were attacked with it. The patients for the most part exhibited but slight disturbance in their general health, though in a few cases there were indications of severe suffering. The bodies of the greater number presented only from six to twelve vesicles, though in a few cases they amounted to from one to two dozen. These vesicles were flaccid, and soon became sunken; they ruptured early. Their, at first clear, fluid contents lost, quickly, their clearness, yet never thickened, nor, in drying, formed a crust. In the largest of the vesicles, there was, at their centre, a point intensely red and somewhat infiltrated, of the size of a lentil. The eruption usually made its appearance from three or four to seven days after birth, and lasted from two to three weeks. The pemphigus eruption appeared in the practice of different midwives, to a very different extent. In that of five it occurred with great frequency, in that of eight others not at all. From the detailed observations of Drs. O. and M. they deduce the following conclusions:—

Acute pemphigus infantilis, which attacks especially during the earliest period of infancy, is usually unattended with fever, and is benign in character; it is not the consequence of a cachexy. In the character of its eruption the disease to which it bears the closest resemblance is varicella. It is always, or occasionally, contagious; and may then attack older children. Attempts made to test its communicability, by inoculating with the serum of the vesicles, have not succeeded.—*Centblt. f. d. Medicinisch. Wisschftn.*, Dec. 24, 1870.

D. F. C.

26. *Acute Pemphigus*.—In the *Aerzt. Intellig. Bltt.* No. 30, 1870, there is given an abstract of the observations of Dr. SCHREPPACH on acute pemphigus, which he believes to be adapted to throw some light on the very obscure cha-

rafter of that disease. An apothecary, 46 years old, of powerful build, had for five years suffered, at intervals, from catarrh of the urinary bladder, which was increased by a cold caught by him from exposure whilst hunting, and kept up by the presence of hæmorrhoidal congestion. During later years his suffering had become greatly diminished. The patient had never suffered from syphilis. February 24, 1870, he contracted a catarrh of the Schneiderian membrane, attended with an eruption of distinct, transparent vesicles, somewhat similar to the vesicles of varicella, on the face and at the joints of the hand. His general health was unimpaired; appetite and sleep normal. Five days later the same vesicular eruption appeared upon the inner surface of the thighs, upon the knee and foot. The vesicles gradually increased in size to that of a guilder; there was no redness nor any hardening of the tissues encircling them. The contents of the vesicles, at first clear, as the latter increased in size, assumed gradually a yellowish hue which increased constantly in intensity, then changed to a dark red, then to a black, from an admixture of blood. After the lapse of some days the eruption extended over the entire surface of the body, with the exception of the arms and abdomen. A few days later the vesicles ruptured, leaving a small thin scale at the parts they occupied; upon the separation of which the skin beneath appeared white and shining. Often there appeared at the parts occupied by the ruptured vesicles, a new crop. The Schneiderian membrane, and conjunctiva oculi became inflamed. At the end of about ten days from the onset of the disease, there occurred slight evening exacerbations of fever; with disturbance of sleep, the latter caused mainly by the intolerable itching and burning of the surface. Neither the contents of the recent vesicles nor the urine presented the slightest trace of ammonia. After the 14th day from the onset of the disease, the contents of the ruptured vesicles emitted a disagreeable sweetish smell; there was now evidence, also, of the presence of ammonia. After this, for many days, there took place a relative improvement in the symptoms of the case. The exfoliation proceeded regularly, and but few fresh vesicles made their appearance. The appetite became stronger; the pulse was about seventy. On the 25th day the urine slightly albuminous; there was now intense itching. New vesicles made their appearance on the parts formerly occupied by them. Thirty-first day, the vesicles again disappearing; 37th day, new vesicles make their appearance; sleep disturbed, appetite poor; peevishness, great debility; 38th day renewal of vesicular eruption, covering now almost the entire surface of the body; there was pain, shifting from one group of muscles to another; forty-fourth day, the elevated red flecks, which occupied on the breast the parts where the vesicles had been seated, became pale and flattened; marked disturbance of respiration; brownish bloody sputa. On the 45th day the patient died. In the treatment of the disease, all local irritating applications were prohibited. The larger of the vesicles were opened and strewn with dry starch. Internally tonics, sulphuric acid lemonade, to neutralize, according to Ramberger and Rayer, the ammonia in the blood. On account of the ready occurrence of sweating, prolonged bathing could not be resorted to. Recently Hebra has advised baths with the addition of carbonate of potash; one pound to each bath.—*Centbltt. f. d. Medicinsch. Wissenschaftn.* No. 45, 1870. D. F. C.

27. *Galvanic Treatment of Scleroderma.*—Dr. F. FIEBER, of Berlin, publishes (*Wiener Med. Wochenschrift*) a case of this disease, occurring in a girl of eleven years of age. Assuming the cutaneous affection arose primarily from some disorder of the nutrition of the nerves, he galvanized the sympathetic, and effected prompt improvement in the symptoms, and a cure of the disease after eight applications of the remedy. It had lasted eight months.—*The Practitioner*, March, 1871.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND
OPERATIVE SURGERY.

28. *Ligature of the Subclavian Artery.*—Sir WM. FERGUSSON, Feb. 18, ligated the subclavian artery of a healthy-looking man, aged 53, who had been a sailor up to a very recent date, and was the subject of an aneurismal tumour in the right axilla, which, by pressure on the brachial plexus of nerves, had caused wrist-drop and paralysis of the arm.

An incision was carried three inches outwards from the margin of the sterno-mastoid, half an inch above and parallel to the clavicle. The platysma myoides and cervical fascia were divided to the same extent, the posterior belly of the omo-hyoid being set free and held upwards out of the way. Owing to the raised position of the patient's shoulders, this incision was found to be insufficiently large, and it had to be converted, by slight incisions above and below into a crucial opening. The exact position of the subclavian artery having been ascertained, the scalenus anticus was exposed by division of some of the clavicular fibres of the sterno-mastoid, and, by careful incision of the deep fascia, the vessel was finally brought into view. The needle was passed beneath it from before backwards, and the vessel was securely tied after Sir William Fergusson had ascertained that the pulsation of the tumour ceased entirely while it was compressed.

Sir Wm. Fergusson said that, in the course of a practice extending over forty years, in which he had enjoyed exceptional opportunities for seeing cases of aneurism, he had only met with one other aneurism of the axillary artery for which he could recommend an operation. The present case had not been unattended with difficulty, as the patient, a man of very muscular build, and with an unusually curved clavicle, had long contracted the habit of carrying his shoulders in a very raised position. The platysma was so well developed that it threw the skin into vertical folds, and made it impossible before the operation to discover the position of the omo-hyoid muscle; also the divided veins, though small, had bled with such freedom as to fill up the wound very rapidly.

The progress of this patient was satisfactory until the eleventh day, when he showed symptoms of pyæmia, of which he died on the eighteenth day.—*Lancet*, March 25, 1871.

Since the date of this operation, Mr. Maunder, at the London Hospital, and Mr. Gay, at the Great Northern, have both tied this vessel; Mr. Gay (*Lancet*, May 6, 1871) placing the ligature on the second part of the vessel, and accomplishing the proceeding with no very great difficulty, being chiefly hindered by the free venous bleeding which obscured all but the very first stages of the operation. The patient succumbed, on the ninth day after the operation, to an attack of bronchitis, which, it was thought, had no direct connection with the aneurism or the operation, and the operation, so far, might be claimed to have been successful, as proven by a post-mortem examination. On April 11, Sir W. Fergusson again undertook the same task under circumstances of some urgency. Owing to the large size of the axillary aneurism, the shoulder was much raised, and the artery proportionately difficult to reach. A single incision was made, extending from near the sternum along the inner two-thirds of the clavicle, and then—profiting, doubtless, by the lesson taught by Mr. Gay's case—Sir William at once passed a double ligature round the external jugular vein, which stretched, swollen, across the centre of the wound, and, dividing this between the threads, turned the ends aside and proceeded with the dissection with very little bleeding. A source of embarrassment was afforded by the uncertainty as to the identity of the anterior scalenus muscle when this was reached. Sir William could not, at first, be sure that he had not to deal with the leash of nerves passing down to the brachial plexus; but when this point was cleared up the rest of the steps were rapidly accomplished, the thread passed easily from behind upwards, and, the pulsation in the tumour being found to have entirely ceased, the wound was closed, and the patient returned to bed, the whole operation having occupied about twenty minutes.

Sir William then proceeded to comment upon the case. The patient, he said, was a healthy young man, who five or six weeks previously met with an accident, a pitch-fork falling against him and wounding his shoulder. One prong entered his side and grazed a rib, but did not penetrate the chest, and seemed to do no harm. The second prong, however, entered at the anterior margin of the deltoid muscle, and probably damaged the axillary artery. Both wounds healed by first intention, but soon afterwards a pulsating swelling was noticed in the armpit, and the man came up to the hospital to consult Sir William, with a tumour the size of an orange situated high in the axilla. It was clearly a case for grave consideration, and the man was suffered to lie quietly in bed for some days; but as the aneurism was then observed to be rapidly increasing, Sir William at once made up his mind as to its treatment. Now, here was a wounded vessel, and the surgeon is justified in such cases in cutting down and tying the artery above and below the opening. But there are exceptions to the best surgical rules, and the question to consider here was whether the deligation of the vessel at a point nearer to the heart would not be attended with less danger to the patient. It was obvious that the torn vessel could not be exposed without cutting through both pectoral muscles, and so causing a very extensive wound; besides which, the vein might itself be injured and need interference. Now, the less the bulk of a wound the less the danger, and, looking at the magnitude of such a cyst as this, and the probability of great loss of blood in its exposure (for it is far easier to talk of compression of the subclavian artery in books than to do it), Sir William decided to leave the ordinary rule and to go nearer to the heart. The one objection to this procedure would be, of course, that collateral circulation might feed the torn vessel. This objection, however, although abundantly proved in regard of the brachial artery, had never yet been established in this locality, and Sir William thought it safe to risk this danger. As to the operation itself, it was considerably more difficult than had been anticipated in so young a subject, and one so free from fat. This was owing to the large size of the tumour, which had increased wonderfully since admission, and caused the shoulder to be much raised, whilst the pressure on surrounding parts had engorged the veins and given rise to troublesome venous oozing. The swollen external jugular vein lying right in the way, it was thought better to tie it and cut it across than to hold it aside for the rest of the operation. The omo-hyoid also being in the way, had been divided. It might seem strange that any doubt could exist as to the anterior scalenus muscle, but in the living subject things are not always so clearly recognizable as in the dead-house, and it was difficult to distinguish between the muscle and the leash of nerves occupying nearly the same position in the wound.

Sir William then referred to the late instances of the same operation being performed in London, and explained that he had thought it right not to delay a single day in the present case, when on his visit on the preceding afternoon he had found the swelling to be so rapidly enlarging.—*Med. Times and Gaz.*, April 22, 1871.

29. *On Wounds and Aneurisms of the Gluteal and Ischiatic Arteries.*—Dr. GEORGE FISCHER, after reviewing the development, progress, pathological anatomy, and symptoms of these aneurisms, passes on to the diagnosis, which he states to have been always very difficult; in 6 of the traumatic cases it was mistaken for abscess; in 1 for medullary sarcoma; in another for ischiatic hernia.

The course, prognosis, and treatment are then fully discussed, and with regard to the latter Dr. Fischer remarks that the Valsalva treatment had no chance; that direct compression was attended with 1 cured and 2 relieved, the latter, however, relapsed; that indirect compression was uncertain, it could be employed in the gluteal region in thin subjects and in 1 case compression of the aorta was had recourse to for 4 weeks, but it proved painful and useless; that ligature was the most common method of treatment. It was adopted in traumatic aneurisms of the gluteal artery in 6 cases, by the laying open of the sac and securing of the vessel, and of these 4 recovered, 1 died of hemorrhage, and 1 entirely failed. In the spontaneous aneurisms ligature of the hypogastric

artery was performed in 4 cases, with 3 recoveries and 1 death; and ligature of the common iliac artery in 3 cases, all of whom died. Galvano-puncture was tried in 1 case without any benefit.

Dr. Fischer gives the following summary:—

1. Wounds of the gluteal artery, whether by puncture, operation, or gunshot, are very rare. The punctured wounds lead more frequently to aneurism. Their diagnosis will be the situation of the wound, and the recurrent dangerous hemorrhage. The best mode of treatment will be ligature, although difficult, and if this fails ligature of the common iliac or hypogastric artery must be performed.

2. Aneurisms of the gluteal and ischiatic arteries are not so rare as is generally considered. There are thirty-five cases on record, of which three-fourths were aneurisms of the gluteal. There was one case of aneurism of the ischiaticopopliteal artery. The traumatic aneurisms comprised circumscribed, diffused, and varicose varieties, and were less frequent than the spontaneous aneurisms.

3. The traumatic aneurisms followed punctured and gunshot wounds; the spontaneous were most frequent after contusions, but in several the cause was unknown.

4. The traumatic cases occurred in males, the spontaneous in both males and females; and the aneurisms were more frequent on the left side than the right. Most of the patients with spontaneous aneurisms were between thirty and forty years of age; they were workmen and chiefly in good health.

5. The traumatic aneurisms followed severe hemorrhage, either immediately or some few days later; the spontaneous occurred either within a short time after the supposed cause, or also supervened slowly, with more or less pain, and in some cases even years elapsed before the patient sought advice.

6. Aneurisms of the gluteal artery, as a rule, were generally seated at the upper border of the great sciatic notch, but might extend over a greater part of the gluteal region. Aneurisms of the ischiatic were more deeply placed, towards the tuber ischii, and were extended towards the thigh or reached into the pelvis.

7. The size of the aneurism varied in both forms, from a slight projection of the size of a hen's egg to that of a child's head. They were soft, elastic, and fluctuating, and might become inflamed.

8. There was nearly always constant a pretty strong pulsation synchronous with the heart's action, whereby the swelling was rhythmically moved up and down, and seldom was it absent. A hissing, whizzing, bellows murmur was also heard. In both forms there was pain in the tumour and in the course of the sciatic nerve, and often accompanied with numbness and lameness.

9. The diagnosis, often most difficult, is to be based upon the pulsation, the aneurismal sounds and sciatic pains, so as to distinguish them from abscesses, medullary sarcoma, and hernia; but, above all, the most important point is the situation.

10. The aneurism if left alone leads to rupture, hemorrhage, and death.

11. The treatment adopted has been, compression with or without the Val-salva method; laying open the sac with ligature of the gluteal artery; ligature of the gluteal artery alone; ligature of the ischiatic, hypogastric, and common iliac arteries; galvano-puncture; and injections of perchloride of iron.

12. The injection of the perchloride of iron is recommended as the best treatment on account of its simplicity, greater safety, less danger, and shorter duration. It can always be employed, except in ischiaticopopliteal aneurisms, with prospects of a permanent cure.—*Brit. and For. Med.-Chir. Review*, Jan. 1871.

30. *Animal Ligatures*.—DR. EBEN WATSON reports (*Glasgow Medical Journal*, May, 1871) that in all the cases of amputation under his charge at the Glasgow Royal Infirmary he used ligatures of Mr. Lister's prepared cat-gut. "I cut them," he says, "short off at the knot, and closed the stump over them. Never in any one case have I been able to detect the ligatures in the discharge—I mean the early sero-sanguineous discharge which flows for a few hours after amputation. I may say that none of the stumps suppurated, except very slightly and superficially. I ought also to state that there was no instance of secondary

hemorrhage in all these cases of amputation. I have therefore great pleasure in recording my sense of the value of this re-introduction of organic ligatures into surgery, for which we are indebted to Mr. Lister.

"I think it is also worth mentioning that I do not completely close my stumps at the time of operation, but leave one or two stitches loose at each side—perhaps three inches long—to be tightened afterwards. This plan has many obvious advantages, especially the prevention of any lodgement of bloody matter between the flaps, which would prevent their speedy union and incur the risk of suppuration. The great object is to have the inner surfaces of the flaps clean and free from discharge, so that they may unite healthily and at once. I believe this practice was formerly inculcated by Mr. Liston, but had fallen into disuse till it was revived on the same principles, but with different materials, by Mr. Syme, and was his last lesson in practical surgery."

31. *Treatment of Penetrating Wounds of the Lungs.*—Dr. BAHR recommends, in order to prevent the accumulation of blood or pus in the lungs or pleural cavity, after gunshot wounds of the chest, to place the patient in such a position that the external wound shall be the most dependent, pressure is then to be applied to the chest and abdomen, and repeated at short intervals. By this procedure, aided by the cough usually present, some degree of inspiratory effort in the bronchi is excited, and the blood and pus are discharged by expectoration. When the opening through the walls of the chest is situated high up in front, by the expansion of the lungs, it is possible, even, that whatever matter shall have escaped into the pleural cavity, may be thus drawn back into the lungs and got rid of by expectoration. Dr. B. describes a case, in which a ball entered the thorax directly in front, and at the end of three weeks subsequently was detected at the angle of the shoulder-blade, and extracted, together with a splinter of wood. Six or eight times daily the patient was placed on his hands and knees, and whilst in this position, compression was made on the chest and abdomen, at intervals. By this course the pleural cavity was kept clear of pus and other matters—the fluid discharged was free from any approach to putridity; to prevent the occurrence of which an injection, at short intervals, of diluted red wine into the pleural cavity was made. Five weeks from the date of the wound, the patient was able to take a full inspiration. From the wound there was discharged, daily from one to two teaspoonfuls of healthy pus. A second case, similar in character, has occurred to Dr. B., but had not been watched to the end when the paper, of which this is an abstract, was published.

The diagnosis as to the fact of the wound having extended to the lungs or not, according to Dr. B., is to be known from the discharge or non-discharge of bubbles of air through the external wound when gentle pressure is applied. From such pressure no injury need be apprehended, as none is known to result from the pressure which is always incurred in the various movements of the patient's body.

In cases of gunshot wounds, not followed by pleuritis, Dr. B. believes there had taken place from a previous attack of inflammation a firm adhesion between the pleura costalis and pleura pulmonalis. In such cases, all that is necessary is a proper posture of the patient's body, with slight pressure, to give free discharge to pus, etc.—*Deutsche Klinik*, 1870. D. F. C.

32. *Operation of Œsophagotomy.*—Dr. MENZEL reports (*Wiener Med. Wochenschrift*, No. 56, 1870) two cases, one successful, the other fatal, of Œsophagotomy, under the care of Professor Billroth. The first case was that of a boy aged eleven, which was the result of drinking some potash lye seven years antecedently. For the two previous days he had been unable to swallow either solid or liquid food. Attempts were made to introduce bougies, but none could be passed through the stricture, the thicker ones being stopped at the commencement of the Œsophagus, the thinner being arrested at the centre of the tube. As the impossibility of swallowing came on quite suddenly, whilst the boy was eating cherries, it was supposed that a stone had become impacted in the lower constriction. The boy was rapidly becoming emaciated, and constantly cried for water. It was determined to perform Œsophagotomy. He

was placed on the operating table, and a cut two inches in length made along the anterior border of the sterno-mastoid muscle. The wall of the tube was seized, and a thread attached to it for the purpose of fixation. An opening of the length of half an inch was then made into it; a pair of curved forceps were then introduced in the direction of the lower stricture. They at once struck on something hard, and Prof. Billroth immediately extracted the cherry-stone. The patient now awoke from the effect of the chloroform, and immediately called for water, which he drank and swallowed without any escaping from the wound in the neck. In twenty-six days the wound was completely healed without bad results. The second case promised less favourably from the first. The man was forty-four years of age; the constriction had first attracted attention on account of the difficulty it occasioned in swallowing at the beginning of last year: but he was taught how to apply the bougies, and was dismissed relieved. In June, however, he returned much worse; he suffered from violent cough, and was much emaciated. A bougie of considerable size could still be passed. The left vocal chord was paralyzed; the cancerous nature of the affection became evident, and the operation was determined upon with the object of preserving life but for a short time longer. He died on the following day.—*The Practitioner*, March, 1871.

33. *Wound penetrating the Stomach, with the escape of Food, followed by complete Recovery.*—Dr. GAETANO PEYRANI reports (*Lo Sperimentale, Giornale Critico de Medicina e Chirurgia*, Jan. 1871) the following remarkable case of this:—

On the 25th of March, 1870, Giovanni Nieto, whilst diverting himself with some companions in a game, received a blow from a knife in the epigastric region. Being invited to see him immediately by the physician of the neighbourhood, I was with him two hours after the reception of the wound. I found him in his house, resting on a mattress, clothed only with his shirt, the anterior portion of which presented a slit of some size. It was covered with blood partly dry and partly fresh, also with some portions of food, consisting of beans half masticated and mixed with fragments of pastry which composed the soup of which Nieto had partaken about two hours before he had been wounded. Above the shirt a portion of the great epiploon was exposed to view, of about four fingers in length, protruding externally from an incised wound of a triangular figure, with a superficial extent of about three centimetres still bleeding, and situated some millimetres to the right of the linea alba, between the ensiform cartilage and the umbilicus. Some other remains of the same articles of food were found in the lips of the wound, and also upon almost the whole surface of the abdomen.

No doubt existed with respect to the nature of the diagnosis, as the wounded man declared that he had eaten these articles a little while before the deplorable accident.

My first care was to cleanse the entire surface of the abdomen. I then replaced in the opening the portion of epiploon which protruded, applied to the solution of continuity the twisted suture, and over all a compress and bandage.

The general condition of the subject of this accident was highly favourable. He was forty-three years of age, of an arterio-sanguine temperament, his constitution was healthy and robust, his skin brown, he was quick and active in his daily avocations, and had never suffered from any diseases save those of infancy. Besides, he had no hiccough or vomiting, no fainting, and very slight local pain. He declared, after his wound had been attended to, that he felt *well*. I ordered him to abstain entirely from food, to use ice internally, and directed him to take ten centigrammes of Baumé's Extract in four equal pills, one every three hours. About two hours after, I left the patient quiet and tranquil as if he was only suffering from some simple injury.

On the next day, the 26th, I returned. I found Nieto in a condition not dissimilar to that of the preceding evening, that is, he was calm and full of hope of a very rapid recovery. There was no gastro-enteric disturbance, no febrile excitement, nor any local pain. I repeated the prescription of the pre-

vious evening, with the addition of some clysters of animal broth, in order to re-excite somewhat the intestinal peristaltic movements, in consideration of a certain torpor of the bowels of which Nieto complained a little. Some fecal matter came away, but without any trace of blood.

On the 27th, I again visited my wounded man, and found nothing new: a slight serous infiltration had stained the bandages in part, which I removed and reapplied. As the patient desired food, I permitted him to have a little fresh milk, a spoonful at a time, continuing the pills of Baumé's extract, and the ice.

After the third day I commenced to employ some slight treatment, from which he experienced relief. On the tenth day, from his having experienced no visceral disturbance, nor giving any evidence of inflammatory excitement or fever, I began really to hope for a fortunate result. The appetite having returned, I permitted him to have vegetable gelatine alternately with chicken broth and goats' milk. On the same day I removed one of the needles from the wound, and ascertained that it was partly reunited. On the 14th, I took away the other two needles, which were surrounded with healthy granulations. From this time I made use of nitrate of silver to restrain them from retarding the complete reunion of the wound. With this plan of simply touching with caustic, and the use of lint, we reached the thirty-sixth day, when Nieto began to experience some heat and pain, which gradually increased from day to day, and the part became swollen and red. I then applied, occasionally, a leech and emollient plaster, and, as the constipation had yielded to simple enemata, I advised absolute diet. From the sixth day from which the inflammatory process (or deep phlegmon) had exhibited itself, which seemed to involve the integuments and the underlying muscles, I resorted to the injection of a solution of sulphate of soda, which I have often found useful, and which I continued for fifteen days. After this, or, to speak more definitely, on the fifty-fifth day, Nieto was completely well.

By the 1st of July this man was able to resume his occupation as a fisherman.

This case, which I regard rather as unique than rare, suggests certain considerations: How did the cicatrization of the wound of the stomach take place? Allow me to develop my opinion with respect to this point. The organ in question, when it received the wound, found itself, as it were, almost full of food, which, of necessity, caused a protuberance in that region. Being opened for a space of more than two centimetres, it became emptied of its contents. In this way, the distension of its walls being lessened, there was a diminution of the gastric mass, then a thickening of the parietes by contraction, or, at least, by the retirement of the same. The wound, under the influence of this modification, should necessarily be placed in a condition much more favourable for its reunion, as is the case with the uterus under the influence of varying circumstances. Hence, by the accustomed secretion of plastic material, the lips of the wound, after a lapse of time, became completely closed. I think, also, that the material influence of the omentum was not entirely unconcerned in the cure of the wound itself.

Another consideration: Why is it that Nieto did not experience any sinister effects from the wound? In the first place it must be observed that no important vessels or nerves were implicated. In the second place, his health could not have been in a more flourishing condition. Every circumstance connected with his constitution, temperament, and mode of life, tended to place him in a state favourable to recovery. He was, as it were, inaccessible to the causes which render dangerous the injury usually resulting from the wounding of so important an organ as the stomach.

Within the past few days (August 10th, 1870) I have seen the man, and find that he has fully resumed his occupation. He is in the best health, and has only a linear cicatrix to show the injury he has received. He suffers no ill effects from fatigue, and requires no supporting bandages or other appliances.

F. P. P.

34. *Gangrene of the Lower Extremities—following Exanthematous Typhus.* (*Centblt. f. d. Medicinisch. Wisschftn.*, No. 52, 1870, from *Archiv. f. Klin. Chir.*, No. 12, 1870.)—Under the notice of Dr. J. A. EASTLANDER, there have fallen thirty-one cases of gangrene of the leg, following an attack of petechial typhus—namely: twenty-five men and six women. In only twenty-one of the above cases could a full investigation of their pathological anatomy be obtained. Of these latter, in fourteen there was found a thrombus within the main artery of the limb; in the other seven cases, nothing of the kind existed. In those attended with thrombi, the patient, about the fourteenth day from the commencement of the fever, subsequent to the period of depression, experienced, suddenly, a severe continued pain in one of his legs, which was numb and cold. It became, including the foot, of a grayish-white colour and cedematous. The pain continued until there was perceptible a line of demarcation between the sound and gangrenous portion of the limb. Gangrenous vesications soon made their appearance, the leg assumed a darker shade of colour, and the gangrenous portion became dry. The line of separation was fully formed at the end of from two to three months. The gangrene in those cases in which there was no thrombus present was similar to that from want of local nourishment and to systemic gangrene. Between the latter and the gangrene of typhus, unattended with thrombus, Dr. E. finds a great similarity, and is of opinion that the cause of both is due to a loss of function in the peripheral bloodvessels of the gangrenous parts. In respect to the treatment of the gangrene following typhus fever, Dr. E. appears to have placed his chief dependence upon the employment of the local remedies supposed to be adapted to prevent the infection of the sound parts, from the adjacent gangrenosed tissues—the pencilling of the parts, namely, with a solution of nitrate of silver, or of iodide of potassium. The action of the solution of nitrate of silver he found to have a prejudicial effect. It destroyed the neighbouring sound portions of epithelium with which it necessarily came in contact, and thus increased the pain and irritation; while, on the other hand, the iodide of potassium had the effect of accelerating the drying process in the gangrenosed parts, and of sustaining the vitality in those parts from which it is rapidly fading. Dr. E. found it impossible by an operation to accelerate the division between the gangrenous and sound parts. But when this separation is complete, so far as the soft parts are concerned, a longitudinal incision, say, two inches in length, is to be made, the bone laid bare, and separated with the saw.

D. F. C.

35. *Transverse Section of Penis.*—In the *Centblt. f. d. Medicinisch. Wisschftn.*, copied from the *Wiener Med. Pr.*, 1870, No. 31, is the history of a case in which, in a boy nine years old, the penis was nearly divided transversely, in consequence of a thread having been tightly passed around it by one of his playmates. When first seen, the penis presented the following conditions: An inch distant from its root, on its under surface, there existed a deep narrow ulcer, by which had been laid open the urethra, and the corpora cavernosa partly divided. The urine escaped altogether through the fistulous opening in the urethra. The boy gave out that he had been bitten by a dog, but the true character of the case was revealed by the physician; Dr. PETERSIL finding at the bottom of the ulcer the remains of the ligature which had been passed around the penis. An elastic catheter was introduced and retained in the urethra. In the course of four weeks the urethral fistula was entirely healed.

D. F. C.

36. *Successful Operation in a Case of a Large Vesico-Vaginal Fistula, occurring in a Child of Eight Years.*—G. SIMON remarks that he has found upon record only two cases of vesico-vaginal fistula occurring in children; one reported by Fergusson, the other by Paget. He has employed in his case the same treatment as he has described for the treatment of the same accident when it occurs in the adult.

A little girl, eight years old, was received in the hospital, on the 8th September, 1866. (*Arch. f. Klin. Chirurg.*, XII., 1870.) She had for the four preceding years been affected with difficulty of urinating, and for the year preceding

her admittance had suffered from incontinence of urine. Upon examination, there was found immediately above the urethra a large urinary calculus, the presence of which was detected in the urethra, as well as through the walls of the vagina. The stone was crushed, and then, by an incision made from the vagina, extracted. It was composed of uric acid, combined with ammonia and phosphates. It weighed forty-five grains. After its removal, an angular opening through the walls of the vagina was brought to light. Its anterior portion lay only one centimetre behind the orifice of the urethra, on the right side of the vaginal wall, and reached to nearly the mouth of the womb, and then deviating from a right angle, made a curve towards the left, and terminated in the vault of the vagina; having a length of $5\frac{1}{2}$ ctm.; while its greatest breadth was one centimetre.

An operation was postponed for two months, to allow of the contraction of the cicatrix in hopes thus to lessen the extent of the fistular opening; this, however, did not occur. Dr. S., therefore, proceeded to unite the anterior half. The edges of the fistula were pared even and sloped, and their approximation secured by six stitches. This operation was successful. In February, 1867, in a second operation, the edges of the remaining portion of the long opening and the cross opening were in the same manner brought together and secured by stitches. The operation was so far successful that the fistula was reduced to the size of a pea. On the second of July, 1867, Dr. S. endeavoured to close this remaining opening, by inserting four stitches. Immediately after the operation, the patient became attacked with fever, and a diphtheritic affection of the vagina. The stitches might have been removed on the fourteenth day after the operation, but this was found impracticable, from the contracted state of the vagina, and the semi-membraniform deposit by which it was lined. The fever was of two months' duration. The fistula was now so far enlarged as to admit the passage into it of the index finger. After remaining so, with but little change, for eighteen months, it was again, January, 1869, closed by the insertion of eight stitches. There remained, after this, but a slight opening, which was at once closed by a single stitch. By the twenty-third of August, the entire opening was closed. To relieve the constriction of the vaginal walls, a deep longitudinal incision was made in the lateral walls of the vagina, as was done, also, after the previous operations. At the end of four days, there set in a considerable hemorrhage, which was arrested by the tampon. The next day the fistula was completely closed. There is still involuntary passage of urine. The cicatrix, which reaches near to the orifice of the urethra, would appear to counteract the function of the sphincter. In lying, standing, and in moving slowly about, the retention of the urine was complete, but not when any hard straining or rapid movement is indulged in.—*Centblatt. f. d. Medicinisch. Wisschftn.* 1870, No. 53.

D. F. C.

37. *Elephantiasis of the Labia; Amputation; Cure.*—MR. S. G. JAYAKAR records (*Med. Times and Gazette*, Jan. 14, 1871) a case of this in a married woman, æt. about 30, admitted into hospital, at Ahmedabad, March 29, 1870, with two enormous elephantoid tumours of labia. "The right one, which was the larger of the two, measured from above downwards thirteen and a half inches, reaching an inch or two below the knee when the patient stood in an erect posture. Its greatest circumference was thirty-two inches. The tumour on the left side measured twelve inches in circumference, and was pedunculated. On separating the tumours, the vagina was easily seen; but the parts around were ulcerated, and presented a canceroid appearance."

The disease first commenced six years before. On the 2d April Mr. J. removed the tumours. "A small skin flap was dissected upwards from the surface of the right tumour, and, a similar one having been made on the lower surface, the tumour was transixed and ligatured on either side. Then, with one sweep of the knife, the whole mass was removed. There was very little difficulty in removing the left tumour. There was a considerable hemorrhage at first, which almost threatened the life of the patient; but she soon rallied, and the hemorrhage was checked by means of pressure, torsion, and ligatures. The mucous membrane of the vagina was brought in apposition with the side

of the skin flaps on either side, and portions of the flaps brought together by means of sutures. During the operation, while the patient was under chloroform, an abdominal tumour presented itself; but the question of pregnancy being rather inconsistent with the presence of such large tumours, it was hurriedly diagnosed to be an ovarian tumour. Both the tumours together weighed 16 lbs.; but, considering the loss of blood and serum during the operation, the whole weight would be put down as 19 lbs.

"The patient progressed very favourably till May 15, when she miscarried, giving birth to a dead fœtus of six months. On the 20th the wounds were entirely healed, and she was discharged on May 23."

38. *Case of Congenital Lymphatic Varix.*—Dr. ROBERT PATERSON describes (*Edinburgh Medical Journal*, May, 1871) a case of this. Dr. P. was asked to see the infant the day after birth, in consequence of the peculiar appearance which the right leg exhibited. Dr. P. found that the child was a female, not strong, weighing, in all probability, between six and seven pounds, and in every other respect having a healthy appearance, with the exception of the right leg. This limb was at least twice the size of the left one, had a slight purple tint all over, with here and there, on the most prominent parts, a bluish tinge. The whole limb, from Poupart's ligament in front, and round by the crest of the ilium behind, down to the toes of the foot, was one mass of twisted and contorted varices. The general appearance which the limb exhibited may be likened to that of a very bad case of varicose veins of the leg in an adult, only the vermicular prominences rolled, as it were, round and round the leg in a singular manner. The child had the perfect use of the limb, but did not move it much unless it was handled, which was obviously painful to it; it was surrounded with cotton wadding, and put into an easy position. The child suckled well, and so long as the limb was at rest, the child seemed free from pain. On examining the limb next day, there was little or no change in its appearance externally. The cotton that had been applied the previous day was saturated with moisture; and it may be remarked that this transpiration from the limb continued throughout the life of this little child; indeed, the quantity of fluid that must have passed out of its system in this way readily accounts for the rapidly-increasing weakness which day after day manifested itself.

Although suckling well and sleeping calmly, it gradually became weaker; the abundant transpiration from the limb never diminishing. All the other functions were conducted naturally. Little or no change took place in the general appearance of the limb for some days, its colour and general appearance being as described; about the fifth day, however, large blebs made their appearance on each side of the ankle; and next day these increased much in size, especially the one over the outer ankle. The colour, too, of the whole limb became darker, and the child's system was obviously becoming much enfeebled. Without any further change worth recording, it gradually became weaker, and died on the morning of the ninth day after its birth.

The limb was carefully examined next day. The varicose prominences all proved to be enlarged lymphatic vessels, filled to distension with a milky serous fluid. From their abrupt beginning in front, exactly on a line with Poupart's ligament, and inclosing the buttock behind, from the crest of the ilium downwards, these twisted and corded lymphatic vessels presented a very peculiar appearance. As the diseased structure passed down the limb, these vessels became, as it were, rolled together, especially at the lower part of the thigh and knee-joint, and further down became spread out around the leg and foot. Around the crest of the ilium behind, but especially along the course of Poupart's ligament in front, the tissues were all much condensed, reminding one of tight bands stretched across. There was no appearance of glandular or other structures. The muscles, glands, bloodvessels, etc., beneath, all seemed natural, and no distended lymphatic vessel could be discovered along the course of the deep-seated vessels and nerves.

It was impossible to trace, unless by very minute dissection, the impediments which arose to the lymphatic circulation over the right buttock; but in front

the tissues, over and around Poupart's ligaments, seemed like a mass of hardened cellular tissue, tightly strung across from iliac crest to pubes, and without the appearance of a gland or other vessel to allow circulation of any kind to take place. The deep-seated bloodvessels, nerves, etc., beneath this ligament, did not seem in any way affected; indeed, the peculiarity of this case, which appeared at the time most striking, was the want of anastomotic connection between the external and internal lymphatics.

Dr. Paterson has not been able to find any case on record exactly resembling this one. The cases which most nearly resemble it differ, however, in so far that the dilated lymphatic vessels of this case appeared on the surface of the extremity, and could not be traced in any way as connected with any lesion of the bloodvessels or absorbent system of the deeper-seated organs; in fact, the case seemed to turn upon the point whether or not there was sufficient anastomosis between the external and internal system of absorbents. I now regret much that the thoracic duct and other organs within the abdomen were not examined.

39. *Treatment of Otorrhœa by Spirit of Wine.*—Dr. F. E. WEBER, in continuation of a former paper on this subject, states (*Berlin. Klin. Woch.*, Jan. 9), that often-repeated experience enables him to state that in otorrhœa, unconnected with caries or polypous growth, spirit of wine constitutes the best topical application, and one that is highly efficacious when there is chronic inflammation of the cavity of the tympanum, with more or less destruction of the membrana. The spirit must be quite pure, highly rectified, and undiluted with water, and its application to the exposed membrane of the tympanum causes no pain, being in this respect, also, a preferable application to most other injections. In some sensitive subjects it produces a burning sensation, which passes off in less than a minute. Before applying the spirit, the ear must be carefully cleaned out by means of the syringe, air-douche, or pencil, when, the patient lying down, as much of it as the ear will hold must be poured in, and retained during five minutes, slight pressure and rubbing of the tragus being employed to assist its effectual penetration. After the spirit has been allowed to flow out again, the meatus must be thoroughly dried and plugged, so as to prevent the access of air. At first it should be applied three times a day, and afterwards twice, continuing it for some time after the otorrhœa has ceased.—*Med. Times and Gaz.*, Feb. 25, 1871.

40. *Skin-Grafting.*—Dr. DAVID PAGE, as the result of microscopic investigation into this subject, has arrived at the conclusion that "when a piece of the integument is removed from a part of the body, and placed upon the surface of an ulcer showing a disposition to heal, there was no transplantation of cutis, but of cuticle, the deeper layer of which, or *rete mucosum*, formed the essential portion for subsequent development and growth; and the young newly formed cells of this layer served as the basis for the production of cicatrix." Further, I found that the artificially induced cicatrix, and that which was spontaneously projected from the margin of the ulcer, were identical in structure, and equally possessing the same low vitality and tendency to destruction, from causes that could not affect the normal integument. These results proved satisfactorily that the *rete mucosum* or *stratum Malpighii* was the part immediately concerned in the process; and that a graft, to be successful, need consist of this layer only. I held, therefore, the view that it is not a transplantation of skin, but of epithelium; not skin-grafting, but epithelium-grafting.

"The advantages sought for in skin-grafting are," he says, "threefold, viz: 1. Rapidity of cicatrization; 2. Formation of an elastic and durable cicatrix; 3. Prevention of excessive contraction of surrounding textures, and subsequent deformity.

With regard to the first of these, it is necessary that the ulcer should be in a perfectly healthy and healing condition, as evinced by the vascularity of its edges and vigour of the granulations on its surface. Hence, the weak and indolent, and callous ulcer must first undergo the usual means of treatment to

bring them into this state. In every case where a graft has been transplanted upon an unhealthy or weak ulcer, the result has been failure.

The formation of a cicatrix of greater durability and elasticity than that spontaneously formed, is an advantage which has been misconceived, and cannot, I think, be actually attained. To replace effectually the lost integument over a broken surface, nothing short of a true plastic operation would avail, such as the Taliacotian and other modes of restoring defects of the nose and lips, wherein a flap embracing the entire thickness of the cutis vera, with its vascular supply, is only partially raised and removed. One thing must be borne in mind in estimating the value of a new formation such as a cicatrix; and that is, that it is the result of rapid cell-development and growth, the final effort on the part of living textures to close over a breach of surface that has contracted to the utmost of the laxity of neighbouring parts. Now, it happens that both the cicatrices formed by an ulcer healed by the assistance of skin-grafting are identical, and equally devoid of an approach in quality or structure to true skin. The fibro-vascular or deep-layer of the cutis, with the hair follicles, sebaceous, and sweat-glands, if destroyed, cannot be regenerated; but the papillary layer, excepting those pupils of special sense containing the terminal twigs of the sensory nerves, is probably represented in the cicatrix, although it is also true that the latter never attains the same degree of versatility, and, as a consequence, is of much lower vitality, as shown in the manner in which old cicatrices give way under cachectic states of the system.

As for the prevention of deformity and excessive contraction of neighbouring parts, this must depend upon the original extent of the ulcer and the position in which it occurs; the less good can be effected by skin-grafting in this respect in proportion to the amount of tissue destroyed and laxity of the textures around. Take, for example, a burn of the soft parts; it is well known that deep-seated contraction, leading often to irremediable deformity, goes on for some time after the surface has cicatrized; and how more rapidly, in the latter respect, effected by the adventitious aid of skin-grafting, could obviate these disastrous results, I am at a loss to comprehend. The only advantages, then, of skin-grafting, I must contend to be acceleration of cicatricial growth."

The following is Dr. Page's method of operating: "The most convenient source for the grafts is the skin over the biceps muscle of the arm. This should be gently pinched up by dressing forceps, and then cut off by a stroke of the scissors. The thickness of the cuticle varies in different parts of the body; but, as I hold it essential not only to avoid the subcutaneous textures, but the cutis itself, the graft should be removed without any bleeding, if possible—an occurrence which would show that the papillary layer of the cutis, at any rate, had been reached. The size of the elliptical piece of cuticle thus removed, should not exceed a quarter of an inch in diameter. The graft is then simply placed upon the surface of the granulations, which it is quite unnecessary to irritate or disturb in any way; and the site chosen should be that where new growth is most desirable. To retain the graft in position, I have used strips of inglass plaster placed over the surface of the ulcer, and carried partly around the limb. The ordinary dressings may then be applied, and the parts treated in the ordinary way, with systematic bandaging and rest. The progress of the graft may be observed three or four days later, carefully raising the strip of plaster; and in a period varying from that time to a week or so, growth begins. The superficial and older layer of the epidermis has then desquamated, and will be found lying loose on the surface, while the deep layer of the rete mucosum is left adherent to the granulations, forming a delicate pellicle of a bluish tint. Henceforward, from day to day, as the dressings of the ulcer are renewed, and the progress of the graft seen, its area grows larger and larger by cell-development at the periphery, probably, too, accompanied by coincident increase of growth from the margin of the ulcer, which seems to receive a fresh stimulus from the presence of the graft. Ultimately, the surface will close over, and present the ordinary appearance of a cicatrix. Why transplanted epithelium should lead to the development of its elements, while the granulations themselves appear to be incapable of setting up similar points of cicatrization spontaneously over the surface, and growth, under ordinary circumstances, only

proceeds from the margins, is difficult to understand. Nevertheless, it is a well ascertained fact. Nor does the transplanted epithelium afford a mere point of attachment for such a spontaneous formation; as experiments with pieces of India-rubber and sheepskin, substituted for skin-grafts, showed that these only acted as foreign matters, causing destruction of the granulations on which they lay."—*British Med. Journ.*, May 27, 1871.

OPHTHALMOLOGY.

41. *Dermoid Tumour of Cornea*.—Mr. H. ROSBOROUGH SWANZY presented to the Pathological Society of Dublin (*Brit. Med. Journal*, April 22, 1871) the drawing of a dermoid tumour of the cornea, which he had observed at the clinique of the late Professor von Graefe. The swelling was congenital, and consisted of two segments connected by a narrow band. The anterior segment was about the size of a large cherry, and the posterior one less than half that size. This was probably the largest dermoid tumour of the cornea that had been described. It was likely that the peculiar shape of the growth had been determined by the constriction to which it must have been subjected by the eyelids *in utero*. The base of the posterior segment covered the whole cornea with the exception of a small portion, a line in width, at the inside. The tumour was removed by Professor von Graefe, and an aperture in the globe was left where the base of the tumour had been situated. Through this opening a considerable portion of the vitreous body escaped, but no crystalline lens could be found. The latter must, therefore, have been congenitally deficient. Microscopically, the tumour consisted of all the elements, more or less developed, of true skin—hair-follicles, papillae, etc. Its main bulk was composed of adipose tissue, corresponding to the usual subcutaneous fat. Mr. Swanzy suggested that this growth might perhaps have had its origin in an arrested, or diverted, development of the crystalline lens, which we know takes place by the inversion and invagination of a portion of the cuticle in a depression of the primary optic vesicle.

For a full report of this case the reader is referred to the *Dublin Quarterly Journal of Medical Science* for May, 1871, p. 295.

42. *Diagnosis of Intraocular Sarcoma*.—Dr. O. BECKER (*Arch. f. Augen- und Ohrenheilk.* 1870, 1, 2) remarks that Von Gräfe was the first to point out the fact that, in its first stages, the existence of sarcoma of the choroid coat of the eye is liable to escape observation, on account of the separation of the retina by pressure from within. Such is not the case, however, when the swelling proceeds from the ciliary body, as the intimate connection of this with the ciliary portion of the retina does not allow of the separation of the latter; as slight, also, Dr. B. found the separation of the retina to take place when the sarcoma of the choroid coat develops itself in the vicinity of the *macula lutea*. It has, also, a far less disposition to press itself downwards, towards the interior of the eyeball, but develops itself extra-bulbar towards the back part of the orbit. In three cases where the tumour was thus seated, there was no detachment of the retina during at least the first period of the disease, and even at a period of such a development of the tumour, probably when it had already caused a disturbance of the power of vision of the eye. The form of the tumour, also, was not roundish as usual, but flatter, acquiring only gradually a greater degree of thickness. When the tumour is otherwise seated, there may take place no separation of the retina, or only to a slight degree, insufficient to prevent the presence of the tumour from being detected. If the tumour be seated within the upper part of the eye, the fluid collected between it and the retina forms a kind of pouch around the tumour. If there is only a small collection of fluid, the tumour through it can be seen, or the pouch representing the form of the tumour; in this manner the case can be distinguished from one of mere separation of the retina. If, however, the

tumour be seated on the lower segment of the choroid coat, the collected fluid is pressed by the tumour more towards the side, and a separation of the retina, with a wider area, becomes evident. At whatever part of the retina the sarcomatous tumour may lie, it can but with difficulty be detected, excepting there be an abnormal development of vessels. These are clearly distinguishable from normal retinal vessels, and from those proper to the choroid coat. This was proved to Dr. B. by many opportunities for observation in cases where the tumour had its seat in the upper portion of the eye. By continuous study of chronic cases, the gradual development of the new vessels could be followed.—*Centblt. f. d. Medicinisch. Wissenschaften*. 1870, No. 44. D. F. C.

43. *Loss of Accommodation from Nervous Shock*.—MR. JONATHAN HUTCHINSON observes (*Royal London Ophthalmic Hospital Reports*, Feb. 1871) that temporary failure of sight when nervous, is very often an indication of hypermetropia. A patient may enjoy perfect sight under all other conditions, but be liable to lose distinct vision whenever startled. An example of this was supplied by a young woman who applied at the Ophthalmic Hospital a few weeks ago. She stated that she was very nervous, and that whenever anything occurred to startle her, she lost her sight for near objects. In particular, she mentioned that if in using the sewing-machine her needle snapped, she would be quite unable for a while to see her work. On examination, it was found that she was the subject of latent hypermetropia. An important distinction is to be drawn between a sudden failure of sight from this cause, and from "epilepsy of the retina," in that the former occasions dim vision only, not absolute blindness. As I have just remarked respecting the failure of accommodation, so common during lactation, that it may sometimes happen in emmetropic eyes, so I must admit that the temporary failures from "shock" do not necessarily imply hypermetropia.

44. *Failure of Sight during Lactation, and its Meaning as a Symptom*.—MR. JONATHAN HUTCHINSON remarks (*Royal London Ophthalmic Hospital Reports*, Feb. 1871) that when patients complain of defects of sight during suckling, it is very frequently merely an indication of hypermetropia. Many hypermetropic women experience no inconvenience whatever, excepting when weakened by lactation. Under such circumstances, they find it difficult to keep the ciliary muscle up to its unusual exertion. The difficulty of sight recurs over and over again during successive periods of lactation. These cases must be carefully distinguished from those of retinal disease, which are met with now and then after pregnancy. The use of tonics is indicated at the time, and it is well to examine as to whether spectacles are not requisite. In some cases this defect occurs in emmetropic eyes, and is induced by a form of paresis of the ciliary muscle analogous to what occurs in diphtheria.

45. *Strychnia in Amaurosis*.—Prof. NÄGEL, in illustration of a former communication (*American Journal of the Medical Sciences*, April, 1871, p. 579) on the successful employment of strychnia in the treatment of amblyopia and amaurosis, has recently published in the *Berlin Wöchenschrift* (No. 6) the details of a remarkable example which the present war brought under his notice. A Prussian soldier, 22 years of age, was, on August 14, struck on the left temporal region by the ball of a chassepôt, fired at about fifty paces distance, which, after shattering the outer wall of the orbit and the zygoma, passed out near the meatus auditorius. The patient did not come under Professor Nägel's care at Tübingen until January 2, when he was in full convalescence, the whole of the wound having healed, except that of the meatus, on passing a probe through which a portion of exposed bone could be felt. The left eye was completely blind, large bright objects not being visible. On placing the patient in front of a light window, he could discern only a slight glimmer of light, and was aware when this was darkened by the hand at a foot distance. In a dark room, also, the bright flame of a lamp was perceived at some inches distance. The visual power of the right eye, too, had undergone considerable diminution, and, if it were employed for a few minutes in reading even large letters, it became fatigued,

while subjective flashes of light appeared in the left eye. The man could not possibly follow his occupation as a weaver. Externally, the eyes exhibited little abnormal, the left pupil, however, being somewhat dilated, and only moving slowly. The results of the ophthalmoscopic examination are given in considerable detail, when it appeared that the ball could not have come into contact with either eye, the effects observed having been produced by the compression of the air caused by its striking against the bones. Some very minute foreign bodies which were observed in the vitreous body were probably due to granules of powder. As the changes which had been induced by the subsequent inflammation were not considerable, the blindness being due rather to functional paralysis than visible anatomical alterations, a favourable prognosis was given. At all events, a moderate improvement in the left eye from the strychnia treatment was anticipated, and the result far exceeded the expectation. Between January 5 and January 15 nine injections of strychnia were performed in the supra-orbital region, or in one or other of the temporal regions. The patient's condition markedly improved after each injection, and as after the ninth he was able to read Jäger's type, No. 1 at 7 inches, and No. 17 at 12 feet distance, his cure was regarded as completed. Judging from all former experience, the improvements thus obtained will also prove to be durable. No ill effects whatever were observed during the treatment to result from the use of the strychnia. A coincident of deafness of the left ear, produced by the shattering of the temporal region, was in no wise bettered by the treatment.—*Medical Times and Gaz.*, April 15, 1871.

MIDWIFERY.

46. *On the Mechanism of the Expulsion of the Placenta.*—Dr. J. MATTHEWS DUNCAN, in a very interesting and instructive paper on this subject, remarks as follows: (*Edinburgh Medical Journal*, April, 1871.) A study of our copious obstetric literature satisfies me that the point I propose to describe in the mechanism of labour is generally misunderstood.

Every one knows that the membranes are expelled, inverted, or flapped over upon themselves; and the same view is held regarding the placenta. It is to this last part's condition during expulsion that I am now directing attention.

Now, the erroneous belief that the placenta generally descends presenting its fœtal surface, seems to me to have arisen from observers not keeping in mind the very great frequency with which the natural mechanism of delivery of this cake is interfered with. I may say, that it is unfortunately the rule to interfere with this part of the natural mechanism of delivery. Such interference, generally carried out as it is by pulling the cord, produces an unnatural mechanism—inversion of the placenta, as Ramsbotham calls it; and this unnatural mechanism, this inversion of the placenta, comes to be described as the natural conduct of the delivery.

To find out the natural mechanism of the expulsion of this cake, it is only necessary to watch the process as nature conducts it; that is, in cases in which the practitioner does not try to modify it in any way. This any one can easily do, by wounding or otherwise marking the part presenting at the mouth of the womb, and then after its birth examining the placenta to find where the wound is; or the observer may pinch the part first presenting at the vaginal orifice, and retain hold of it till the whole is born, and then find what is the part so pinched.

In this way it is easily discovered that the part of the placenta presenting at the os uteri, and subsequently at the os vaginae, is not the fœtal or amniotic surface, but the edge of the placenta, or a point very near the edge. When it is not exactly the edge, the placenta is not inverted or folded upon itself, there is only a little of the lower marginal part of the cake transversely folded up; it is still really the edge that presents, only thickened a little by being folded on itself; and I think this folding occurs chiefly in placentae which are thin at the

part folded. This folding is manifestly caused by the pulling up of the edge by the still adhering membranes; the resistance of the force required for their separation being greater than the rigidity of the marginal part of the placenta so folded.

My own numerous observations satisfy me that the inversion of the placenta, or its folding upon itself transversely to the passage, or the presentation of its fetal surface, as authors describe, and as Schultze and others depict, is a very rare occurrence—so rare as to debar describers from calling it *a* natural, and still more from calling it *the* natural, mechanism. The placenta is folded upon itself during the process; but the folds are according to the length of the passage, not transverse to it, as inversion or presentation of the fetal surface imply.

The advantages of the natural mechanism, as I have described it, are obvious. It is true, that after the passage of the bulky child, there is no such necessity for a mechanism of the delivery of the comparatively small placenta, as there is for the passage of the child's head. There is ample room and verge enough for the placenta passing in any way. But the natural mechanism claims respect as the *natural* mechanism, and, moreover, it presents obvious advantages over any other mechanism. Just as the child's head passes through the pelvis so as to dilate the passages as little as may be, or in the manner demanding least expenditure of force, so also does the placenta. It comes edgewise. If it came inverted, or transversely doubled up, or folded into a cup shape, we should have a body passing that required at least twice as much space as is required if it passes edgewise, and only longitudinally folded. But this is not the only advantage of the natural mechanism.

If the placenta comes edgewise, its uterine surface glides along the surface of the uterus; its foldings, parallel to the length of the maternal passages, are well squeezed together, and little space is offered for the reception of blood flowing from uterine sinuses. The uterine wall keeps close to the folded placenta. The uterus contracts, forces the placenta downwards, and at last its body is nearly globular and empty. There is no hemorrhage worthy of the name. Hemorrhage, when it does occur, is not demonstrated to take place according to the description of Baudelocque or the plate of Schultze; and I believe these gentlemen do not give the correct account of it. Authors too frequently, I may say almost invariably, describe too great an amount of hemorrhage as part of this natural process. I admit that the frequency of some hemorrhage is a strong argument in favour of this proceeding. But I believe that interference, which, though common, is frequently injudicious, is occasionally the cause of this hemorrhage, which is, therefore, in such circumstances, unjustly laid to the account of the natural mechanism. It is far from uncommon to observe labours in which there is no hemorrhage, in which not an ounce of blood is lost during delivery, there being only enough to smear the uterine surface of the placenta with a very thin layer. This absence of hemorrhage I regard as the natural state, and in this I suppose all obstetricians will join me, at least if I introduce the element of desirableness as an indication of naturalness. Such absence of hemorrhage depends on the adoption of what I describe as the natural mechanism. The presence of hemorrhage is a part of the erroneously described natural mechanism, and to me this presence is one proof of the erroneousness of the description.

But although the mechanism described by Baudelocque,¹ and the plate of Prof. Schultze,² of Jena, do not give the natural process, they indicate a state of matters which is frequently observed after the separation of the placenta. Schultze's second drawing is an admirable representation of what takes place frequently, perhaps generally, when any considerable force is used to deliver the placenta by traction of the cord. Then indeed, truly, the placenta is inverted, and its edge puckered up purse-like. The insertion of the cord comes first, as is so frequently represented in woodcuts. The placenta is transversely bent on itself, and puckered up; hemorrhage flows to fill up the partial vacuum which is thus

¹ System of Midwifery, Heath's translation, vol. ii. p. 4.

² Wandtafeln zur Schwangerschafts- und Geburtskunde.

produced. The inverted mass forms a firm plug, closely filling the vagina. Traction on this plug is exactly like traction on the piston of a pump. If hemorrhage does not naturally take place to fill up the void which tends to be formed beyond the placenta, then it is powerfully attracted and induced by the piston-like action of the placenta, pulled by the cord. The interior of the uterus, already scarified by the separation of the placenta, requires but this pulling at the cord to be effectively cupped.

From all this there follows the very valuable corollary, that in practice the third stage of labour should be left to nature, and that, when interference is required, the natural mechanism of the birth of the placenta should be as closely imitated as circumstances admit.

47. *The Sickness of Pregnancy; its Causes and Treatment.*—DR. GRAILY HEWITT read before the Obstetrical Society of London (*Lancet*, April 29, 1871) an interesting paper on this subject. The author said that the sickness observed in pregnancy has generally been accepted as an inevitable circumstance. The causes of its occasional inveteracy and even danger have never been satisfactorily made out. The treatment of these latter cases has not been conducted on any one principle. Yet it must be evident that an analogous cause must be in operation in the slight cases and in the more severe forms. The present state of professional opinion may be represented in the statement that it is due to the distending effect of the increasing contents of the uterus, exciting thereby in a reflex manner the act of vomiting. The author, accepting this view, proceeds to propound the theory that the existence of flexions of the uterus in various degrees of intensity is the prime factor in giving rise to the vomiting of pregnancy in by far the majority of instances, inasmuch as it offers an additional hindrance to the proper expansion of the uterus, and gives rise mechanically to such pressure on the sensitive uterine tissue at the seat of flexion as results, in most cases, in this particular reflex irritation. This theory as to the cause of the vomiting of pregnancy will account for the mild and severe forms of the symptoms. The author was led to this conclusion by observation of the close connection between obstinate nausea and vomiting and flexion associated with distension of the uterus in the *non-gravid* state, as in cases of dysmenorrhœa produced by flexion. Latterly he had found himself applying this explanation to the gravid cases, and having tested the matter by observation for some little time past, the clinical facts which he had accumulated appeared very completely to bear out the general truth of the theory now enunciated. An anteflexed gravid uterus is most commonly the condition found to be present, the anteflexion existing before the pregnancy supervenes; retroflexion of the gravid uterus much less commonly, because the retroflexed uterus is less liable to become impregnated than the anteflexed organ. The very obstinate cases of sickness are observed generally at the second to the fourth month, when the uterus is sometimes found tightly fixed in the pelvis and unable to escape from it; how far the explanation will apply to cases where the uterus is more advanced in pregnancy the author does not say, not having had cases to test the matter by. The slight cases, when the sickness is limited to the time of rising from bed, are explained by the action of gravity in this erect posture suddenly bending the uterus on itself to a slight extent. Undoubtedly whatever tends to hinder the expansion of the uterus may equally induce sickness; thus some cases may not be accounted for by the theory now put forward. The results of treatment, based on the foregoing conclusions, and consisting in measures to restore the organ to its proper shape, have been found very successful in the author's experience; sometimes maintenance of the horizontal position alone sufficing, in other cases mechanical supports elevating the fundus anteriorly or posteriorly, according to circumstances, being used for the purpose. The author is quite satisfied of the value of the theory as a basis for practice. He believes that the pressure on the nerves of the uterus at the seat of the bend is the exciting agent; this pressure usually leads to congestion of the uterus above and below, and possibly other secondary results. Dr. Hewitt does not, however, contend that every case of sickness would be found to be a case of flexion, nor would every case of flexion be attended with sickness.

Dr. BARNES observed that there had been many theories advanced as to the cause of vomiting in pregnancy. Displacement of the uterus was an old theory. He was, however, in a position to state, from many precise observations, that flexions of the gravid uterus were often present without any unusual degree of vomiting, and that most obstinate vomiting occurred where there was no flexion. The theory of the stretching of the uterine fibres had been most distinctly set forth by the celebrated Bretonneau, of Tours. Many facts concurred in proving its truth. Growth that kept pace with the growth of the contents of the uterus did not cause vomiting, but it was caused whenever the fibre was stretched rapidly, the distended contents outrunning the accommodating growth of the uterus. When vomiting had once become excessive another element entered into the case. The defective nutrition was attended by impoverishment of the blood, and the blood was further degraded by the absorption of noxious material from the system; concurrently with this the habit of vomiting had induced a morbidly irritable state of the spinal cord, so that it readily responded to the slightest peripheral or emotional excitation.

Dr. TILT denied that vomiting was any more caused by flexions of the gravid than by displacement of the unimpregnated uterus. Uncomplicated uterine malpositions had no symptoms. In the case referred to in the paper the cure was attributed to rest in the horizontal posture, a remedy of general use, recommending itself on other grounds than the problematic power to rectify a flexed gravid womb. Dr. Tilt thought that the proposed practice of restraining the sickness of pregnancy by the use of pessaries likely to lead to disastrous results.

Dr. BRAXTON HICKS observed that his experience did not coincide with Dr. Hewitt's. He believed that tension of the uterus was the chief cause, as shown by the immediate relief afforded when the membranes were ruptured in some cases; but he certainly thought, with the author of the paper, that the retro- and ante-flexed condition favoured the pressure. The act of vomiting probably tended to increase the displacement.

48. *On Irritable Bladder in the Latter Months of Pregnancy.*—Dr. PLAYFAIR read a paper (*Med. Times and Gaz.*, Feb. 25, 1871) on this subject before the Obstetrical Society of London. He remarked on the frequency with which a severe and intractable form of irritable bladder was met with in the last few months of pregnancy, often giving rise to much distress and suffering, and little amenable to general treatment. He stated his opinion that many of these cases were due to a distinct mechanical cause—namely, pressure on the bladder, resulting from an oblique or transverse position of the fetus. He described how these cases could be recognized by a careful examination of the abdomen. With regard to treatment, he stated that little or no benefit could be expected from drugs, but said that immediate relief could often be obtained by altering the position of the fetus in utero, by abdominal manipulation after the manner described under the name of “external version” by Wigand, Stoltz, Mattei, and others. He described the method by which this could be effected, and concluded the paper by detailing three cases in which the most severe forms of dysuria were immediately relieved by this simple procedure, after the failure of every other plan of treatment.

Dr. BARNES said that if it should be proved that dysuria was a symptom of transverse or oblique position of the child, we should have a valuable indication to correct the malposition before labour came on, by substituting external bipolar version under the most favourable circumstances for turning at the time of labour. He would ask why Dr. Playfair, having rectified the position of the child, did not secure it in due relation to the axis of the uterus? This could be done by a bandage and two pads; one applied to each pole of the fetus, and directed towards the median line.

Dr. BRAXTON HICKS considered himself indebted to the author for pointing out the fact that obliquity of the uterus produced irritability of the bladder. He was, however, at a loss to account for it by the pressure of the fetus on the bladder, as the head in ordinary positions would press quite as much as a shoulder, if not more, and that against the most irritable portion of the bladder

—namely, the lower portion. He would suggest another explanation—the disturbance to the form of the bladder by the altered form of the uterus.

49. *Perforation of the Uterine Walls by a Sound*.—Dr. ALT, in his *Gynæcological Clinic (Centblt. f. d. Medicinisch. Wisschftn., Dec. 10, 1870, from Berliner Klin. Wochenschr., No. 42, 1870)*, describes two cases, occurring in newly-confined women, in which a sound was passed into the uterus far beyond the customary depth—17 to 13 cm. respectively.¹ No hemorrhage followed in either case, nor any symptoms of peritoneal disease. Dr. A. concurs in opinion with Hœnig, that in both the above cases there occurred a perforation by the sound of the walls of the uterus, which can readily take place, without the employment of any objectionable force in the use of the instrument, when the uterus is in an atrophied condition, a common occurrence in the puerperal state. The explanation given by Matthews Duncan, and Hildebrand, of the character of these cases—namely, that the sound passes into the abdomen through one of the Fallopian tubes—is shown by Dr. Hœnig, in his analysis of the cases on record, to be untenable; but more especially is the incorrectness of the opinion proved by the observations reported by Dr. E. Martin, in the second edition of his work on *Displacement and Curvatures of the Uterus*. On laying open the abdomen in one of the cases similar to those reported by Dr. A., he actually saw that the sound had passed into the abdominal cavity through the wall of the uterus. D. F. C.

50. *Is it Right to Vaccinate or Revaccinate Pregnant Women?*—Dr. ROBERT BARNES states (*British Med. Journal*, March 4, 1871) that this question has frequently been put to him. Some persons seem to entertain the apprehension that pregnant women incur special and serious risks under vaccination. To justify exceptional neglect of vaccination in their case, it ought to be shown, not only what this special risk is, but also that it is more serious than the risk incurred by the women themselves by taking smallpox, and thus of propagating the disease to others. The community as well as the pregnant woman must be considered.

To make out, then, a case for special exemption, it ought to be shown that the pregnant woman incurs a particular danger. Where is the evidence of this? The following passage from Dr. Meigs's work on *Diseases of Females* (1848) has been cited to me as authoritative in this matter. "Do not," says Dr. Meigs, "vaccinate women when pregnant. I have been the witness of dreadful distress from the operation. Eschew it, I entreat you." It would be very desirable to have the cases justifying this very emphatic assertion recorded. I fear there is some confusion in the matter. Thus, asking for evidences of mischief, as of abortion, from vaccination, I have been told of abortion and serious illness following smallpox. I do not doubt that smallpox is a most serious accident to a pregnant woman. But does it not follow, *à fortiori*, that pregnant women should be protected against smallpox?

My own experience has supplied me with many illustrations which warrant the following propositions:—

1. Pregnant women living under epidemic or zymotic influences are more prone to take the prevalent morbid poison than others.

2. Having taken a morbid poison, they are less able to throw it off. Their excreting organs, charged with the double duty of purifying two organisms, are liable to break down under the additional burthen.

3. The morbid poison then pursues its course in a system which is less able to resist its injurious action. Abortion and a most dangerous form of puerperal fever are likely to follow.

Against this certainly greater risk of taking smallpox, and certainly greater severity of the disease if taken, what, I ask again, is the special danger of vaccination or revaccination? The operation, we know, is not altogether free from danger in adults of either sex. Before resorting to it, it is wise to get the system into good condition. Do pregnant women run more risk than other

¹ Another case will be found in the number of this Journal for Oct. 1870, p. 571.

adults? Probably they are at some disadvantage. But I believe that the special dread of abortion is exaggerated, if not altogether unfounded. The healthy ovum clings to a healthy uterus with wonderful tenacity. An ordinary illness, much less the slight febrile disturbance of vaccination, will not affect this relation. On the other hand, slighter causes may precipitate an abortion already imminent.

So far is vaccination from causing abortion, that cases are known in which the foetus has gone safely through the vaccine disease *in utero*, so that it has subsequently been proof against vaccination.

I think, then, we may conclude, in the absence of decisive evidence of special danger, that pregnant women are entitled to equal protection against smallpox with the rest of the community; and that vaccination or revaccination should be practised on pregnant women, in their own interest, as well as in that of the community of which they form a part.

51. *Contributions to the Pathology of the Ovum*, by Profs. HEGAR and MAIER, of Freiburg.—This paper is founded on a considerable number of careful observations on cases of membranous dysmenorrhœa and abortion, and the results arrived at are embodied in a concise *résumé* at the end. The view that the decidua is to be looked on as the uterine mucous membrane in a hypertrophied state, is considered to be opposed to actual fact, and if a systematic expression be desired, it is much more correct to name it a new formation. This new formation arises by means of cell growth in the connective tissue stroma of the mucous membrane, in the submucous tissue, and in the external coats of the vessels, while there is as yet no evidence for the belief that the glands or their epithelium, or the epithelium of the mucous membrane, are involved in the process. The stimulus to this new formation which forms the decidua is, under normal conditions, given by the impregnated ovum, but in cases of membranous dysmenorrhœa a pathological stimulus leads to the production of a similar new formation. When these two stimuli—the physiological and pathological—coexist, then we have quantitative, and even qualitative, deviations in the structure of the new formation, which are to be looked on as hyperplastic conditions of the new-formed tissues.—*Glasgow Med. Journ.*, May, 1871, from *Virchow's Archiv*, Feb. 1871.

52. *External Examination a Preventive of Puerperal Fever*.—T. HALBERTSMA, Prof. Gynæcology, Univ. Utrecht, says that it has been proved that internal examinations may generate infection, and he therefore suggests, that in cases where there is danger of infection from the accoucheur, the external examination should be the rule, the internal one the exception. "By internal examination alone we cau," he says, "in most cases, ascertain the position of the child, whether it has sunk deep into the pelvis, and by auscultation whether there is danger for the child. If the head is sunk deep, and the pulsation of the foetal heart normal, we have reason to anticipate a favourable issue, and for the time should do nothing but leave Nature to her own course. We shall, in this way, not be able so well to ascertain whether the delivery is proceeding; we shall be still less able than by internal investigation to predict in some measure how long the labour will last; yet the nature of the pains, the flow of the liquor amnii, are some indications. The desire to ascertain how it is proceeding is not to be thought of if there be any risk of infection. In two cases I have refrained from internal examination. To suppress curiosity was the greatest difficulty to be overcome. The placenta was removed by external pressure after the so-called method of Credé.

"It may be objected that it will be difficult, even when we know the head is sunk deep, to diagnosticate a first or second position, or four for those who distinguish four positions. Besides that, the first and second position can often be diagnosticated by external investigation only; at all events, this knowledge will be dispensed with if infection can be avoided."—*Med. Times and Gaz.*, June 10, 1871.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

53. *Abscess of the Brain after, but not in Consequence of an Injury of the Head.*—This very interesting case, especially in its bearing upon medical jurisprudence, is related by DEUTSBEIN, in Horn's *Vrtljschr. f. Ger. Med.*, XII. 1870. A young man, as the immediate consequence of a slight blow upon the head, exhibited only a simple wound of the scalp; subsequently, however, he became attacked with convulsions and other symptoms of disease, which after first abating, then increased very much in intensity; and in the course of several weeks terminated in death. An examination after death showed an abscess in the right lobe of the cerebellum, in connection with the indications of a long preceding chronic otitis interna of the right side, and caries of the petrous portion of the right temporal bone, so that it was evident the blow on the head had only an accidental connection with the intracranial abscess.—*Centralblatt f. d. Med. Wissenschaften*, 17 Dec. 1870. D. F. C.

54. *Phosphorus Poisoning said to be Cured by Oil of Turpentine.*—Dr. LICHTENSTEIN reports, in the *Berl. Klin. Wöchenschr.*, 1870, No. 33, the case of a girl 19 years old, who cooked with a steak of latched meat the heads of eight friction matches, and partook of the same for food. Soon after—precise time not given—she was attacked with a pain in the stomach and vomiting of phosphorescent matter mixed with coagula of blood. Twelve drops of ol. terebinthinæ in milk being administered the pain in the stomach and vomiting ceased. Subsequently the vomiting returned, the discharges presenting traces of blood, but none of phosphorus. An emetic of ipecac. and tart. antimon. was given, and the turpentine, in barley water, continued. The vomiting now became almost entirely free from blood, and at the end of two hours the only complaint made was loss of appetite. No after symptoms. This case is adduced by Dr. L. as a further evidence of the correctness of the reports of Personne, Andans, Köhler, and others in favour of oil of turpentine as an antidote against poisoning by phosphorus.

In a comment upon the report of Dr. L. and his conclusion, Dr. SHULTZEN (*Centralblatt f. d. Med. Wissenschaften*, Oct. 8, 1870) remarks, that during a few years past he has observed in the wards of the Berlin "Charité," some thirty to forty cases of phosphorus poisoning, of which nearly one-half terminated favourably, notwithstanding no oil of turpentine was given. The prognosis of a favourable event is to be based solely upon the occurrence of free vomiting, either spontaneously or induced, soon after the poison has been taken. In Dr. L.'s case vomiting set in immediately after the phosphorus was swallowed, and, according to Dr. S., to this is to be mainly, if not entirely, attributed the safety of the patient. D. F. C.

55. *A Case of Poisoning by Nitrate of Silver.*—Poisoning by nitrate of silver is of rare occurrence, and is not mentioned by many of the best authorities. Hence, Mr. THOMAS SCATTERGOOD records the following case (*British Medical Journal*, May 20, 1871).

A medical pupil, while touching a small ulcer beneath the tongue of a child aged 15 months, with a stick of nitrate of silver three-quarters of an inch long, which he held in his fingers by one end wrapped in paper, had the misfortune to let it slip down the child's throat. The following are the notes of the symptoms: "Almost immediately the child vomited some oily matter, supposed to be cod-liver oil and milk, the oil having been taken shortly after breakfast. When the vomiting had ceased, and within a few minutes of the caustic being swallowed, common salt was given in considerable quantity, after which the child was slightly convulsed. Again vomiting took place, and now the matter ejected had a white curdy appearance, and no doubt was principally chloride of silver. The administration of salt was repeated frequently. Vomiting and convulsions occurred at short intervals till 11.30." [The caustic had been swallowed at 9.30.] "At that time there was a copious liquid stool, containing a quantity of the white

curdy substance. At 1 P.M., the child fell into a composed sleep, which lasted for half an hour; after which convulsions returned with increased violence, and continued until 3. The extremities then became cold, the face pinched, the skin clammy, and the pulse almost imperceptible; and child died in violent convulsions at 3.30 P.M., six hours after swallowing the poison."

A *post-mortem* examination was made twenty-five and a half hours after death. Cadaveric rigidity was marked. There were no marks of nitrate of silver in the mouth, but in the œsophagus two or three small patches of corrosion. The stomach contained two ounces and a half of inodorous fluid. Its mucous membrane was pale in colour, except one small point of ecchymosis, and exhibited a large patch of corrosion, interrupted transversely in several places, but extending from the cardiac opening along the greater curvature for four inches. It was half an inch wide at the cardiac end, and one and a half inches at the end nearest the pylorus, and was of a brilliant white colour. In the duodenum, and the first twelve inches of the jejunum, the valvulæ conniventes presented a similar corrosion over nearly their whole surface, but of a grayer colour. This was not washed off by a gentle stream of water, nor by rubbing with the finger, by which, however, loose white particles were removed. There were no morbid appearances in the other parts of the alimentary canal, in which about three ounces of fluid were contained. The other viscera were healthy. The heart was empty and contracted. The mucous membrane of the trachea was normal. The contents of the stomach, ilium, and rectum were separately analyzed. In each there was a considerable quantity of chloride of sodium, most in the stomach, and least in the rectum; and of course, therefore, in none of them was there any nitrate of silver. The white particles rubbed off the corroded patches in the stomach, and off the valvulæ conniventes, were proved to be chloride of silver.

It appeared that, although the antidote was administered promptly and in sufficient excess to neutralize the whole of the poison, yet probably much mischief had already been done before the administration commenced; and the solid stick of nitrate of silver, retained by its weight in contact with the most depending part of the stomach, continued to destroy its mucous membrane even while its own upper surface was undergoing decomposition by the chloride of sodium; and meanwhile a sufficient quantity of strong solution of the caustic flowed through the pyloric orifice, to damage the mucous surface of a considerable part of the small intestine before it was reached by the chloride. I think that the free administration of albumen or of milk should be combined in such a case with the use of the chemical antidote.

In the succeeding number of the *British Medical Journal*, MR. ERNEST HART reports a similar case. The child was kept on an exclusively milk diet, and recovered. Milk, Mr. Hart states, is an excellent antidote to nitrate of silver, in virtue of its large proportion of suspended albumen, and he uses it in lieu of salt and water for neutralizing the excessive effects of even the mitigated caustic, when employing it locally on the mucous membranes of the eyelids.

56. *Snake Poison*.—DR. SHORTT states (*Madras Monthly Journal of Medical Science*) that the numerous experiments he has conducted during the last four years, not only in Madras, but in most of the districts of this Residency, lead him to believe that when an animal is fairly wounded, and has had poison injected into the wound, be the quantity small or large, in man or beast, death is sure and certain, with this exception, that when the poison is long retained in the poison sacs, and thus to a certain extent concentrated by the absorption of the watery parts, and the quantity large, death is almost instantaneous, and it is a question of so many minutes; but when the poison is weak from frequent and rapid secretion, or the quantity small, death is more prolonged and it is then a matter of hours. The cobra poison is so active and energetic, that five-sixths of a grain of the fluid poison killed a large Persian horse in 24 hours and 25 minutes, and one-twelfth of a grain killed a full-grown dog, weighing 18 pounds, in 25 minutes. * * * These cases, as well as the experiments conducted by myself and others, are fully conclusive as to the worthlessness of ammonia as an antidote.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Encephaloid Disease of the Right Superior Maxilla. Resection of the Bone. Recovery. By WM. A. GOTT, M.D., of Veroqua, Vernon Co., Wisconsin.

In the latter part of May, 1869, R. L., aged 60, of nervo-bilious temperament, a farmer by occupation, of impaired health, consulted me in reference to a disease of the right upper alveolar process. He stated that he has experienced an occasional pain of a sharp, lancinating character in that side of the face for nearly twenty-five years, but of such a transitory nature as to have given rise to no uneasiness as to its serious import; also that his general health had always been good until about two years ago, when from some cause or other it began to decline more or less rapidly.

I found, on examination, the entire alveolar process to be one mass of fungoid disease, through which the only remaining teeth, the second molar and canine, protruded. I extracted these teeth for the purpose of ascertaining the condition of the antrum; this was found to have become implicated, and from it a foul, bloody discharge issued. The opening made by the extraction of the canine tooth would have admitted the end of the little finger, being partly occupied by a dark-coloured fungous mass of the consistence of brain, which came away in fragments when broken down by a probe. A probe introduced into the opening met with no obstruction until its extremity impinged against the under surface of the floor of the orbit. The patient was much emaciated, and his strength so much weakened that his gait was tottering and unsteady, his appetite impaired, and his pulse feeble. The skin covering the bone was slightly discoloured for a space of about an inch commencing at the ala of the nose, and extending transversely that distance; there was tenderness on pressure at that point, and some puffiness of the integument. For the relief of the patient, an operation consisting in the resection of the bone entire or in part, was clearly demanded; but his condition forbade any such procedure at the present time. He was, therefore, put upon a preparatory tonic treatment, with a nutritious diet. The local treatment consisted of astringent washes and injections into the cavity of a solution of carbolic acid, grs. x to an ounce of water.

The patient having improved in health, the operation was performed on the second of July, and was the one advised by Velpeau, his modification of Gensoul's method. I was ably assisted in the operation by Dr. H. A. Chase, of Veroqua, and Dr. Charles Poff, of Readstown, in this county. The patient having been placed under chloroform (this occupied upwards of an hour at the least calculation, on account of the impurity of the article), an incision was made from near the outer angle of the eye to the commissure of the lips; the large flap thus formed was dissected from below upwards and turned back out of the way. The bone being thus exposed, I next proceeded to sever its connections with the other bones of the face.

With Liston's cutting pliers, the external orbital process at its junction with the malar bone, the zygomatic arch, and the os unguis, were cut through, and the ascending nasal process with a narrow chisel and mallet. The two incisors of the right side having been extracted, the two maxillæ were separated in front with the metacarpal saw, and also its palatal process as far back as its junction with the palatal process of the palate bone, as well as its transverse connections, which were divided by the chisel and mallet through the mouth. The bone being now seized between the thumb and fingers, was forcibly moved from side to side, and after a little effort raised from its bed. The cavity, having been cleared of any remaining shreds of the tumour, was filled with lint. Very little blood was lost during the operation, not to exceed eight ounces. But a single vessel required the ligature. Before bringing the lips of the wound together, the indurated tissue on the inner surface of the flap where it had been in contact with the tumour, was shaved off. As soon as the anæsthesia had passed off, half of a grain of sulphate of morphia was administered, and the patient placed in bed.

On the fifth day after the operation the sutures were all removed and the wound was healing by the first intention throughout; the flaps were supported by adhesive straps in case of accident. For a few days after the operation there was slight febrile reaction, lasting for three or four days, after the subsidence of which the patient made a rapid recovery, and about the fourteenth day was walking about his room. He complained of some difficulty in deglutition and in articulation, but no more than is to be expected after this operation; both gradually became less annoying in a much shorter time than I had anticipated. The tumour presented all of the characteristics of true encephaloid disease.

P. S. Up to date of present writing, November 5, Mr. L. continues in the enjoyment of excellent health. He informed me, a day or two ago, that since the operation it has been better than for a number of years past. The parts have healed kindly and soundly to all appearances. I shall deem it my duty to report the subsequent history of this case, as too short a time has elapsed since this operation to determine its result.

Removal of Large Stone from Female Bladder by Rapid Dilatation.
By H. H. LONG, M.D., of Orion, Henry Co., Ill.

Mrs. E. C. M——, aged 33, widow. Small and emaciated. Has suffered more or less from urinary difficulty for the past two years, and, for the last three months prior to the operation, grew rapidly worse. Suffering the most excruciating pain, incontinence of urine, and a constant irritating mucous discharge from urethra and vagina. Her case has been diagnosticated chronic inflammation of the urethra and bladder, with vaginitis and hypertrophy of the uterus, and she has undergone a variety of treatment at the hands of different physicians.

About the first of April last I determined to use medicated injections into the bladder, for which purpose I introduced a small bougie, and *immediately* came in contact with a stone lying at the neck of the bladder. This threw new light upon the case, revealing a new *indication* in the treatment. I then tried to *dilate* the urethra by a succession of bougies, but it was so sensitive that she could not bear them to remain. Failing in this, I determined to try the operation of "rapid dilatation" for its removal, which I did April 17. Using chloroform to full anæsthesia, I then effected the dilatation by means of a pair of ordinary "duck bill"

dressing forceps, introducing and withdrawing them a number of times more and more opened each time, until I thought the dilatation was sufficient to allow the stone to pass out. I then introduced the same forceps, grasped the stone, and withdrew it by exerting considerable force. Did not have more than half an ounce of hemorrhage during the entire operation; a little blood passed off with the urine for a day or two, and considerable soreness remained for five or six days. Incontinence of urine lasted for three days, after which time she gradually regained control over the bladder. In eight days she was out of bed, in two weeks out of doors, and is now (seven weeks after the operation) entirely relieved of her trouble. The stone was oblong in shape; measured four and a half inches in its longest, three inches in its shortest circumference, and weighed three hundred and eight grains; consisted of oxalate of lime incrustated with lithic acid and phosphates.

Case of Deficiency of Abdominal Parietes in a Fetus.—By W. R. HAMILTON, M.D., of Glenwood, Schnyler County, Mo.

April 27, 1871, I delivered Mrs. B., æt. about 28, the mother of two children, after a natural labour, of a pretty well-nourished female child of average size, in which all the abdominal muscles and integuments were deficient. This deficiency extended from just above the superior edge of the pubes, extending around to the crest of the iliac bones on each side, and as high up as the scrobiculus cordis, and from the crest of one iliac bone to the opposite one. The abdominal viscera were inclosed in a thin and perfectly transparent membrane, evidently the peritoneum. The umbilical vessels, which were inserted about an inch and a half above the inferior edge of this membrane, were very small and weak. The space covered by this transparent membrane formed nearly a perfect circle; and at the edge of the integument and muscles where they united with the membrane, there was a perfect and well-defined line, presenting the appearance of having been cut through and healed abruptly. The convolutions of the intestines could be as distinctly seen as if viewed through glass. The mother got along well. The child lived until May 9.

Ovarian Tumour Coexistent with Pregnancy. By W. L. NICHOLSON, M.D., of Fort Dodge, Iowa.

On the night of January 16th, 1870, I was called to Mrs. C. W. T., supposed to be in labour (primipara); found her in constant but not severe pain, which after a few minutes' observation seemed to be cramps rather than contractions; this was confirmed by examination, which indicated no labour in progress. Gave an anodyne, which soon induced tranquillity and sleep; next day cramps returned, but were quieted as before, but henceforward were constantly recurring. The bowels had always been regular, and the digestive organs were in a normal and healthy condition.

I regarded the symptoms as premonitory, the patient being very large, and confident that she had about reached the end of gestation; which confidence was increased from her husband going East nearly nine months previously, and remaining absent about three months. But pain and distress were steadily increasing, and at the end of a month she experienced no relief except when influenced by hypodermic injections containing three-quarters of a grain of morphia in twelve hours; this quantity was still further increased to one and a half grain before treatment terminated.

At ten months and a half from last cohabitation size was still steadily

increasing; foetal motions very distinct; dyspnoea and emaciation added to the other ailments; no food was retained unless immediately after a large hypodermic injection. Met Dr. F. F. Grayson of this town in counsel, who confirmed my previous diagnosis of excessive liquor amnii. We were also satisfied that Mrs. T., who by the way was an intelligent lady, should date her pregnancy from her husband's return at the end of the three months referred to.

The patient evidently failing, I proposed premature labour, concurred in by Dr. Grayson and also Dr. C. C. Griffin, of Vinton, Benton County. March 21st, the membranes were ruptured after having ineffectually tried a dilator. The operation was rendered very difficult by the extreme retroversion of the os uteri, caused by the pressure of fluid in front. It became necessary, with the aid of chloroform, to introduce the whole hand into the vagina, to properly guide the sound.

Labour soon supervened, and a child of about six months was delivered alive, surviving, however, but a few hours. To our surprise, there was no undue quantity of liquor amnii, and the abdomen continuing as before, naturally at once suggested another child. A brief examination dispelled this idea, showing that the enlargement was external to and not within the womb.

Facts and symptoms in the history of the case previously unnoticed now asserted their value, enabling us to diagnose a unilocular ovarian cyst of left ovary, obscured and complicated by the concurring pregnancy. It was decided to puncture the cyst as soon as the patient sufficiently rallied from the shock of parturition. Five days afterwards, March 21, paracentesis was performed, thereby evacuating about six gallons of light straw-coloured fluid containing but little albumen. Recovery was rapid, and at the end of a month the patient had resumed her normal condition, entirely dispensing with anodynes.

At the end of two months a slight increase in size was manifest. By the persistent use of iodide of potassium in large doses this remained stationary, but always commenced to increase so rapidly whenever the remedy was discontinued, as to leave no doubt of the efficacy of the iodide in restraining the morbid growth. In every instance the check was perceptible as soon as the system was impregnated with the medicine.

On the whole, however, there was a continued though slight increase in size of left side, for nine or ten months, when, by my advice, Mrs. T. visited Cleveland, Ohio, to consult Dr. Weber, of that city.

I have just heard from Dr. Griffin, who went to Cleveland to be present at the operation. It unfortunately failed, since, after the incision was made and fluid again evacuated, the ovary and adjacent tissues were so agglutinated and incorporated together, that extirpation was necessarily abandoned. She recovered well, and is in about the same condition as she was succeeding the first paracentesis.

It would seem well in connection with this case to advert to the benefits of administering opium hypodermically. The number of injections were over two hundred. The punctures always healed up without pain or soreness, and after the enormous quantities consumed, there were no cumulative effects perceptible, nor was there the least appetite or desire for opium or any other stimulant or narcotic, while no other means could have sustained the patient through this long and trying ordeal.

DOMESTIC SUMMARY.

Tenia Caused by the Use of Raw Beef.—Prof. JOSEPH LEIDY, in an important communication made to the Academy of Natural Sciences of Philadelphia (March 21, 1871), stated that, "Recently, one of our ablest and most respected practitioners of medicine submitted to my examination a tapeworm which had been discharged from a young man, after the use of the *Aspidium filic-mas*. The physician, in giving an account of the case, stated that he had previously treated the patient for another affection, in which raw-beef sandwiches had been prescribed for food. After looking at the worm, I remarked that it appeared to be the *Tenia mediocanellata*, a species which I had not before seen, and added that the patient had probably become infected from a larva swallowed with the raw-beef sandwiches. The specimen consisted of the greater part of the worm, broken into several pieces. Including some lost portions, it was estimated to have been upwards of thirty feet in length. Unfortunately, the head proved to be absent; but, so far as characters could be obtained from the specimen, in the form of the segments, position of the genital orifices, and the condition of the ovaries, it agreed with the description given of *T. mediocanellata*, rather than with *T. solium*. From a want of acquaintance with the former, I did not feel entirely satisfied that the specimen actually belonged to that species.

"Subsequently, my friend brought to me the anterior part of the body, probably, of the same individual tapeworm. He observed that his patient continuing to complain, he had administered another dose of the male-fern, which was followed by the expulsion of the portion of the worm now presented. The head of the parasite was included, and it confirmed the view that it pertained to the *Tenia mediocanellata*.

"The case serves as another caution against the use of raw flesh as food."—*Proceedings of the Academy of Natural Sciences of Phila.*, May, 1871.

Diagnosis of Malignant Disease of the Ovaries.—Dr. T. GAILLARD THOMAS, at a late meeting of the New York Academy of Medicine, read an interesting and very instructive paper on this subject (*American Journal of Obstetrics*, May, 1871). He classified the most common forms of the disease, based upon the descriptions of some of our most respected modern authors, as, for example, Klob, Farre, Seanzoni, Rokitansky, Kiwisch, and Courty.

1. The ovary may be affected by true scirrhus degeneration. This form of cancer is decidedly rare, occurs usually in advanced life, and generally creates a tumour not larger than a large orange. It develops slowly, and presents the physical appearance of scirrhus disease in other organs. It may be a primary malignant development, or it may occur in the ovary secondarily, its primary development having been previously recognized in some other part of the system.

2. The ovary may be the seat of medullary cancerous deposit, which may originate in the vesicles of Degraaf, in a corpus luteum, as Rokitansky once saw it do, or in the stroma of the organ. Distension sometimes causes rupture of the tunica albuginea of the ovary, and then exuberant medullary growth develops in contact with the peritoneum and abdominal viscera.

3. Scirrhus or medullary cancer may alone or united attack the wall of a cyst, and develop either as an endogenous or exogenous production. The cancerous matter so completely invades the cyst-walls in some cases as to make it appear that cystic degeneration had occurred secondarily to its deposit.

4. From the wall of a cyst, vascular, arborescent villi may project, lining the cavity and, in time, filling and distending it so as to cause the rupture of its walls. Then the exuberant cancerous element develops and secretes in immediate contact with the peritoneum, and produces either a dangerous peritonitis or abundant abdominal dropsy.

With this form of cancer colloid degeneration is often associated, when it constitutes that variety which has been described by Cruveilhier as alveolar cancer.

The mere presence of villous projections from a cyst-wall must not be regarded as necessarily stamping the growth with malignancy, for it is not rare to see benign papillomatous projections arising from such localities. Dr. Peaslee informs me that fifteen or eighteen years ago he removed an ovarian cyst which was thus studded with arborescent villi, which, at the time, he strongly suspected of malignancy. The patient, however, not only entirely recovered from the operation, but is living at the present time, never having had any development of kindred degeneration elsewhere.

The recognition of the fact that the ovarian disease which affects a patient partakes of the character of any one of the forms of cancer just enumerated must ever be a matter of great moment, for upon it must depend not only our prognosis, but the determination to adopt or reject the operation of ovariectomy. If the case be one of malignant disease, operative procedure will accomplish little if any good, while it exposes the unfortunate sufferer to pain, prolonged sickness, and the danger of death.

In the history of five cases of malignant disease of the ovaries, Dr. THOMAS draws attention to the prominent symptoms which offer themselves as aids to diagnosis. The circumstances which most prominently point to the development of the disease are:—

1. The rapid development of a solid tumour in an ovary, with—
2. Marked depreciation of the strength, vital forces, spirits, and general condition of the patient.
3. The occurrence of œdema pedum and spanæmia at an early period, and consequently dependent upon a general blood state, and not the consequence of pressure by the tumour.
4. Lancinating and burning pains through the tumour.
5. Cachectic appearance.
6. The occurrence of ascites without evidences of cirrhosis or other hepatic disease, organic disease of the kidneys, or heart, or chronic peritonitis, the fluid accumulating in such large amounts as to force aside the supernatant intestines, and produce dulness in place of resonance on percussion in dorsal decubitus.

Cystic degeneration of the ovary sometimes advances with great rapidity, and is accompanied in its course by rapid emaciation, marked physical prostration, ascites, and a cachectic appearance. It may be asked whether a case thus complicated would not present the very conditions which have been pointed out in this essay, as furnishing grounds for the diagnosis of malignant disease. Unquestionably it would; but let it be remembered that while these symptoms are mentioned as valuable aids to diagnosis, I do not pretend to maintain that they will always enable the diagnostician to avoid error. Again, in citing ascites with a small tumour as a most important symptom of malignant ovarian disease, I do not allude to slight or even moderate effusion with a large growth, but a markedly disproportionate amount of fluid, a great deal of abdominal effusion with a very small tumour.

Besides the condition just mentioned, there are two others which may create difficulty in differentiation from ovarian cancer—one is pregnancy in the middle or latter months, complicated by peritoneal effusion; the other a uterine fibroid existing with cirrhosis of the liver, with its attendant dropsy. The first may generally be known by its characteristic symptoms; while the second, although it might be recognized by the physical and rational signs of uterine fibroids and of cirrhosis, would very likely give considerable trouble in diagnosis.

When difficult and obscure cases present themselves in which a positive diagnosis becomes impossible by ordinary means, paracentesis or explorative incision should be resorted to, rather than that the patient should be deprived of the prospect for cure held out to her by ovariectomy. Very often the most doubtful case may be satisfactorily settled by evacuating the abdominal effusion, and passing the index finger through a small opening in the peritoneum, so as to touch the morbid growth.

Dr. EMIL NOEGGERATH stated (*Medical Record*, June 1, 1871), that it was difficult to add anything to the paper, as the six cases which came under his

observation corroborated all that had been presented; but he would suggest *two* more symptoms in the diagnosis of cancer of the ovary.

1. Infiltration or hardening of the recto-vaginal septum, which had been met with in three instances—and in all of these cases he was convinced at the time of the nature of the disease.

2. Infiltration of the glands of the abdomen, and especially of the omentum.

When infiltration of the vesico-vaginal septum existed, there were extensive adhesions of the lower part of the cyst to the pelvic cavity, and these could generally be made out. All of these symptoms mentioned had reference to malignant cancer of the ovary.

A Case of Labour occurring in Connection with a Large Ovarian Cyst.—Dr. J. C. REEVE, of Dayton, Ohio, reports (*American Practitioner*, April, 1871) a very interesting case of this rare complication. A very natural classification of labour complicated with ovarian tumours has been made into, first, those cases in which the tumour descends into the pelvis before the child and obstructs its progress; and second, those in which it remains in the abdomen above the child, and may thus interfere with the process of parturition only by the distension it occasions, or may complicate it with the serious accident of rupture of the cyst. To the latter class belongs the case about to be reported, and if warrant be needed for its publication it is to be found in the exceeding rarity of such cases on record.

Dr. Reeve was called in consultation, on the 6th of Nov. 1870, to see Mrs. C., and he gives her history as follows: She is twenty-eight years of age, rather below medium stature; was married in August, 1867, and within a year from that time suffered considerably from pain in left side. In April or May of 1869 she began to increase in size, and while picking peaches during the following fall felt a sensation of water rolling about in her. For these ailments she went under the care of Dr. H., the gentleman then present; and her disease was believed to be ascites, and it very probably was; at least she was cured by the administration of hydragogue cathartics and diuretics. Of this there seems to be no question.

Her last menstruation ceased on the 12th of February, 1870, and her size has steadily and rapidly increased from the time she considered herself pregnant; she now measures fifty-three inches around the abdomen; fluctuation is very distinct, exceedingly so, and equal in every direction except from left hypochondriac to right iliac regions; dulness upon percussion at every accessible point, but she is so unwieldy and helpless that changes of position for comparison of different regions are impossible. A solid body can be felt in the right iliac region, and movements of the limbs of a child were recognized there. In the left iliac region the placental bruit is very distinct, but the sounds of the foetal heart cannot be found. There is no very marked enlargement of superficial abdominal veins; there is pitting of lower part of abdomen under pressure of the stethoscope; no oedema of the feet, but says she has had some. An internal examination showed the os to be very high; it could scarcely be reached even by using two fingers. It was soft and without projection of lips. A round, solid body could be just felt above the pubis, evidently the child's head. No fluctuation from the vagina to external surface, or the reverse. She is in excellent spirits; pulse ninety-two, of good strength; respiration easy now, but she has suffered from some severe and alarming "smothering spells;" appetite is good, tongue clean, but bowels constipated.

In consultation I found her physician of opinion that it was a case of ascites complicating pregnancy, and in favour of immediate tapping. My opinion was that the great enlargement was due to an ovarian cyst, the diagnosis being based principally upon the absence of any evidence of fluid to be obtained by vaginal examination, which must have been the case had it been a case of ascites, and upon the absence of any organic disease sufficient to account for so large a peritoneal collection. I was opposed to the operation of tapping because I was then misinformed as to date of her last menstruation; was under the impression that her time was already up, and that the operation would be followed immediately by labour, and the risks of the puerperal condition would be

increased. Moreover, I had not had time, either for sufficient study or observation of so novel a case, to feel justified in interference to that extent.

Our prescription was limited therefore to compound powder of jalap to open the bowels, and careful directions were given as to position, and especially as to diet. Heretofore she had been eating a good deal of vegetable food likely to increase her distress by producing flatulence. I was engaged to attend her during labour.

On the 9th of November I again visited the patient, first confirmed my former diagnosis, and then made a closer scrutiny of some other points, for instance, the heart, which I found as before healthy, and urine non-albuminous. I now recommended immediate operation, and, with the further light I then had as to the time of her expected confinement, urged it strongly. Her friends declined, however, to have anything done, and I awaited her labour with much anxiety. She had been far more comfortable since her bowels had been kept free; had no "smothering spells" after the first visit.

November 16th, was called to attend her in labour; the period of two hundred and eighty days will be up on the 19th. She now measures fifty-three inches around the abdomen, but feels in good health and is in most excellent spirits. Pains began yesterday about noon, and have been recurring irregularly ever since, but quite light. Now, 5 A.M., they return every seven to ten minutes, and are tolerably severe, not expulsive in character. Secretion of passages free; os well open and dilatable; would admit the hand if necessary; membranes protruding; head felt at upper strait, but position not made out; she has vomited two or three times. By 8 A.M. she had vomited once more; pains were more severe and expulsive; the membranes were now ruptured during an examination; she then passed urine, as she had done several times before. At 8.20 the pains were severe and frequent; she was considerably distressed, her breathing being laboured. The os was now pushed up over the head; position, left occipito-anterior. Her labour continued regular and tolerably severe; still her distress did not seem to increase. I stood prepared to assist her with the forceps whenever the head should be stayed in its progress, or she should seem to require it. I constantly urged her not to bring her voluntary expulsive power to bear upon the child, and trembled with every pain for fear of rupture of the cyst. The uterus fortunately proved to be alone equal to the task, and at 10 A.M. delivery was accomplished of a male child, alive and healthy, which weighed about seven pounds. After delivery of the placenta I tried to gain some information as to the tumour per vaginam, but could not; no fluctuation could be perceived. Measurement of the abdomen after delivery forty-nine and a half inches.

On the 18th of November I found her comfortable, and could then make a little better examination of the abdomen than before. Found it well rounded up, not flat; and dull upon percussion everywhere except in the left lumbar region. From this time I saw the patient no more. My proposition was to tap her as soon as convalescence was established, and then, should the cyst fill again, of which event occurring I thought there was less probability than usual, because its growth had been coincident with pregnancy, to operate for removal of the tumour. But she and her friends were impressed by the former cure, and influenced by her physician's opinion that her present disease was the same as the former attack cured by him, she returned to her old home and placed herself under his care. The next information I received of her was an invitation to be present at the operation of ovariectomy. This operation was performed by Dr. Dunlap, of Springfield, on the 31st of January last, and to that gentleman I am indebted for the following particulars: right ovary affected, tumour consisted almost entirely of a single cyst, the walls of which were so thin as scarcely to bear blowing up, contents clear, weight of solids and fluids eighty-seven pounds. Unfortunately death of the patient occurred on the 3d of February.

That pregnancy may go on to full term and end in the safe delivery of a living child even when an ovarian tumour of very large size exists, is certain from the case reported and from others to be found on record, although Spencer Wells, in a paper on the subject in London Obstetrical Society Transactions, says it is

"altogether exceptional" for it to do so; and Robert Barnes says, "it might be laid down as a general law that nature would not tolerate the concurrent progress of these two conditions." Oslander¹ reports several such cases. One of them was a woman whose abdomen was "larger than that of one carrying twins," who became four times pregnant, and bore three living sons and one daughter while in this condition. In 1801 he tapped a woman and took away forty quarts [?] quartier] of water; eight weeks before the patient had been unexpectedly delivered of a living child, and her confinement was not looked for because she had had this dropsical abdomen for three years. Another woman with extremely large abdomen came to him and he counselled tapping; but she refused, saying she believed herself to be pregnant, and she had already given birth to two children since this swelling came on, and she merely wished the question of pregnancy settled.

Dr. Geo. H. Kidd, in a paper² on ovarian tumours complicating pregnancy, gives some cases. One patient measured forty-eight inches around, and the labour was complicated with hemorrhage. He gives five pregnancies in two patients without serious inconvenience from the tumours.

Braxton Hicks³ states, as the result of his own observation, he had seen no evil consequences arise from complication of labour with ovarian disease. His experience amounted to seven pregnancies; one was tapped at the seventh month.

When we come to the treatment of these cases, we find the widest differences of opinion even among the most eminent authorities, as shown by the reports of the debates already alluded to. Some would tap, others would induce premature labour, others again would leave the patient entirely alone, while so high an authority as Mr. Hicks says that "until more cases have accumulated he is not in a position to lay down any rule of action."

Certainly the treatment will be influenced by the character of the tumour in the particular case under care. In such an one as that reported there can be no question as to the propriety of tapping; and we believe that more cases can be found which terminated fatally from rupture of the cyst than of those which went to the end of pregnancy and delivery with safety to mother and child. We have too the highest authority for this operative proceeding, a fact of which I was in ignorance when this case was under my care. Spencer Wells says, "he has repeatedly tapped ovarian cysts during pregnancy, and never saw anything unusual follow." [The conclusions of Mr. Wells' most valuable paper may be found in the number of this Journal for April, 1870, p. 562.]

A New Method of Arresting Hemorrhage by the Artery Constrictor.—Dr. S. FLEET SPEIR offers (*Medical Record*, April 1, 1871) this instrument as a substitute for the ligature, acupressure, and torsion. The arrest of arterial hemorrhage is a subject of intense interest to every surgeon; it is attended, at times, with such hazards to the patient, and with such difficulties to the surgeon, that a new method of accomplishing it may not be found unacceptable, the more especially as this method claims to have fulfilled the indications which are considered as those most to be desired by surgeons generally, viz: the closure of arteries by some method which leaves no foreign substance attached to the vessel or in the wound, and is, at the same time, proof against secondary hemorrhage.

It is claimed that such a result can be uniformly arrived at by the use of the artery constrictor, which consists of a flattened metal tube, six inches (more or less) in length, open at both ends, with a sliding steel tongue running its entire length, and having a vice arrangement at the upper extremity, by which it can be made to protrude from or retract within the tube or sheath. The lower end of the tongue is hook-shaped, so as to be adapted to the artery to be constricted. It is so shaped that, having grasped an artery, it can be made to

¹ Handbuch der Entbindungskunst, I., p. 280, 1818.

² Dublin Quarterly Journal of Medical Sciences, May, 1870.

³ Transactions London Obstetrical Society, vol. xi. Also Am. Journ. of Med. Sci., Oct. 1870, p. 487.

contract upon it by means of the vice at the upper end, which forces it within the sheath.

The hook of the tongue is so shaped and grooved as to form only a compressing surface, by which means the artery, when acted upon by the force of the vice, is compelled to assume the form of the curve of the tongue, and the artery is constricted in such a way that its internal and middle coats give way, but the external coat is preserved intact. The severed internal and middle coats contract, retract, curl upon themselves, and are driven down the artery in the form of a plug by the continued pressure of the grooved tongue as it passes on into its sheath. The artery may now be slipped out of the instrument, and it will be found that the external coat has been compressed at the point where it was in contact with the instrument, and the internal and middle coats will be found severed and invaginated on either side of the constriction. This invagination of the internal and middle coats is of itself sufficient to arrest the flow of blood; and as soon as the current of blood is arrested in the vessel, a coagulum forms upon the invaginated surface of the internal and middle coats, and this completes the occlusion of the artery.

The application of the constrictor is very simple. The artery is to be caught up by a tenaculum or a pair of forceps (which answers better) and the tongue of the constrictor placed around the vessel; the tongue is then drawn tightly upon the artery by means of the vice arrangement at the upper end of the instrument. As soon as the screw turns with a considerable degree of resistance, or the internal and middle coats are seen to be invaginated, by noticing their movements in the end of the artery, the instrument is to be detached from the artery and the operation is completed.

In large arteries the tongue of the constrictor must be drawn into the sheath further than is necessary for small arteries. This is the one point which it is necessary to attend to in the closure of large arteries; there can be no harm done to the vessel by being drawn well into the tube, and a thorough invagination secured. The invagination of the internal and middle coats may be made as thorough as it is desired, by drawing the artery into the tube as far as needed to effect the object. Some of the instruments have been made with stops, to indicate when a proper invagination was reached; but by further experience it was found that the touch was the best guide for the operator. By a continued traction upon the external coat of an artery, after the invagination is once commenced, the internal and middle coats may be peeled up and pushed entirely out of the external coat, and this latter coat be drawn out through the sheath, entirely freed from its inner coat, so that the operator has it in his power to produce an invagination to any desired extent.

It is well always to permit the blood to flow into the artery (if it has been controlled by tourniquet or otherwise during the operation) before removing the constrictor; this secures a perfect clot upon the invaginated coats, which can hardly be displaced afterwards.

"The peculiar effect of the artery constrictor upon the coats of the artery—rupturing and invaginating the internal and middle coats, while it preserves the integrity of the external coat," Dr. Speir states, "appears to offer a more substantial ground for confidence than any method based merely upon pressure or an internal coagulum. This, added to the fact that the instrument is instantly withdrawn from the vessel, seems to offer all the advantages which can be expected of any method."

Carbolic Acid as a Remedy for Carbuncle.—Dr. J. D. ROGERS, of New York, was led by Dr. J. C. Nott's advocacy of local applications of carbolic acid in carbuncle (see No. of this Journal for April, 1871, p. 596) to try its efficacy in a severe case under his care, in which other remedies had failed. The axilla, he states (*Medical Record*, April 15, 1871), was the part affected, the inflammation being quite violent and extensive. He ordered a solution of the acid (1 part to 40 of water), a sponge moistened in the solution to be applied to the part and renewed every two or three hours. During the first day the symptoms were much modified, and after the second day all applications were discontinued; resolution, complete and rapid, being the result of the treatment.

Case of Congenital Scleroderma.—Dr. WILLIAM GOODELL presented to the Philadelphia Obstetrical Society (*American Journal of Obstetrics*, May, 1871) the following history of a case of congenital scleroderma.

S. S., aged 27, in poor health, and strumous, has, during seven years of her married life, given birth in six labours to eight stillborn children. Her labour in which this child was born was normal throughout, the second stage lasting not quite an hour after the membranes broke. The liquor amnii was excessive in quantity and of a dark-green colour. The infant, a female weighing eight and a half pounds, and well nourished, was covered with the densest coat of *vernix caseosa* that he had ever seen. It was of a bright-yellow colour, as if stained with bile, and concealed the entire body excepting a small patch of skin around the nose and mouth. He remarked an unusual thickness and denseness of the skin as he gave the child to the nurse, but attributed these to the vernix. After being washed the forehead and cheeks were dotted with minute black specks, presenting a "cut-beard" appearance. Shortly afterwards purple blotches were discovered all over the body. The child moaned incessantly, occasionally breaking out into a shriek, and "could not be kept warm, the flesh feeling as hard and as cold as marble, even through its clothes,"—as one of the nurses remarked. Convulsions now set in, the pupils became widely dilated, and it died about twenty hours after birth. Dr. G. remarked that, although scleroderma was a very rare disease in this country, it was by no means so in Europe, where it attacks adults as well as infants; that, however, so far as his reading went, he believed this case of scleroderma in utero to be unique, and he had therefore asked Dr. Wm. F. Jenks to make an examination of the body and skin, which he had kindly consented to do; and with the following result:—

On the face and neck there are numerous petechiæ, which are also scattered sparingly over the abdomen, thighs, and buttocks. The skin is of a yellowish hue. The normal roundness of outline is wanting.

When pinched up between the fingers it is found to have lost its elasticity, retaining the form which it is made to assume, while in the flexures of the joints it is thrown into thick heavy folds. The pitting made by pressure with the finger slowly disappears. The features of the child are somewhat effaced by a general tumefaction of the integument. The entire scalp is edematous, and on section an extensive hemorrhagic clot is found under the galea aponeurotica, and a second also under the periosteum of the left parietal bone. The anterior portion of the scalp is infiltrated with a deep-yellow coagulated serum which could with difficulty be pressed from the meshes of the connective tissue. The posterior fontanelle is large and bulging. The entire convex surface of the cerebrum is covered with semi-coagulated blood, while several large firm coagula occupy the middle and posterior fossæ of the cranium.

The brain is unusually firm, of a delicate transparent bluish tint, and markedly anæmic. There is no effusion in any of the ventricles. The spinal cord is not removed, but, so far as can be ascertained *in situ*, a general hemorrhagic oozing had taken place between the membranes and the cord.

The epidermic layer of the skin is rather diminished than increased in thickness, while the corium is greatly hypertrophied. The lobules of adipose tissue are widely separated from one another by bands of connective tissue, so that a fringed or jagged appearance is produced when the skin is reflected from the thoracic walls. The heart is contracted and empty. (The condition of the ductus arteriosus and of the foramen ovale was not observed.) The lungs are anæmic, and the boundaries of the lobules rendered very distinct by the hypertrophied condition of the interstitial connective tissue. The liver is pale and bloodless. The gall-bladder is distended to its utmost capacity, its duct being so obstructed that the finest probe cannot be introduced; by very forcible pressure, however, between the fingers, a dark syrupy bile can be forced out. The adipose tissue surrounding the kidneys presents the same dry stearine-like character which has already been mentioned. The kidneys are healthy. The pyramids display delicate yellowish-red radiating lines, due to the usual uric acid infarctus of the first week of infantile life.

Microscopic Examination of the Skin.—The papillæ are nearly absent, being only indicated here and there. The tissue of the epidermis and rete Malpighii

is normal, but an extensive growth of connective tissue and elastic fibres has trebled the normal development of the corium. These fibres form a firm reticular tissue, compressing the vessels, and causing their subsequent atrophy. The hair-follicles and sebaceous glands are hypertrophied and surrounded by a growth of connective tissue, by which the terminal extremity of the duct has in some instances been closed, and the subsequent accumulation of sebaceous matter and epithelium has produced a globular dilatation of the tube. The lobules of adipose tissue are widely separated from one another by broad bands of tense, fibrous connective tissue.

Pistol-ball Wound of Heart; Death on Fifth Day.—Dr. G. F. DUDLEY records (*The Medical Archives*, March, 1871) the following interesting case. J. H. L., æt. 38, of vigorous and robust constitution, was wounded on Feb. 5th by a bullet from a small four-barrelled pistol, the ball entering the left chest about an inch to the left of the nipple. After receiving the wound he walked to his room, and on the following day was brought to this city, by railroad, a distance of 162 miles; and after reaching here expressed confidence in his ability to be out in a few days; indeed, thought himself able to attend a dance that came off that evening, but was dissuaded from making the attempt. He died on Feb. 9th.

A *post-mortem* revealed that the bullet had passed between the fifth and sixth ribs, through the lower lobe of the left lung, through the pericardium, and penetrating the left ventricle of the heart at about two-thirds way from the base to the apex, had passed through the cavity of the ventricle and lodged in the base of the heart at the junction of the ventricle with the auricle. There had been a small amount of hemorrhage into the pericardial sac.

The length of time the man lived with the bullet in his heart, the apparently entire absence of shock and of all fatal indications, as also, the fortitude and endurance manifested after so deadly a wound, are all matters of professional interest.

[Wounds of the heart penetrating its cavities—except, perhaps, when made by an acupuncture needle—are, we believe, very generally *fatal*; but the length of time which persons survive after such an accident is sometimes considerable. In the number of this Journal for May, 1829 (vol. iv. p. 263), will be found a report of a case in which the patient lived sixty-seven days, and on *post-mortem* examination, three shots were found lying loose in the cavity of the right ventricle, and two in the right auricle. In the subsequent number of this Journal (vol. iv. p. 307) there is an interesting paper by the late John Redman Coxe, M.D., on wounds of the heart, in which the learned author refers to a very large number of cases of this kind, in which life continued for various periods after the accident.

In the *Dictionnaire des Sciences Médicales*, under the article Wounds of the Heart, there is also a large collection of cases.

ALFRED POLAND, Esq. (*Holmes, System of Surgery*, 1st ed., vol. xi. p. 376), also refers to quite a number of cases in which the patients survived for various periods, in one five weeks; and also several instances in which complete recovery seems to have taken place.—Ed.]

A Dime ejected from the Trachea by Vomiting.—Dr. LORENZO HUBBARD, Assistant Surgeon U. S. A., relates (*Pacific Med. Journ.*, June, 1871) the case of a soldier, who was playing with a *dime*, by tossing it into his mouth, when the coin passed through the glottis into the trachea and lodged at the point of the bifurcation of the right bronchial tube. By inflating the lungs, and then making a strong effort at expiration, the "piece" would rise into the trachea, but when it reached the glottis suffocation was so imminent he was forced to allow it to descend.

Dr. H. states that three hours after the accident, he determined, while the piece was still movable, to try the experiment of vomiting, with the hope that in the effort of vomiting it might be ejected. In this he was not disappointed for in the very first effort it was thrown out with considerable force.

UNIVERSITY OF PENNSYLVANIA.

MEDICAL DEPARTMENT.

Ninth Street, above Chestnut, Philadelphia.

ONE HUNDRED AND SIXTH SESSION.

The Lectures of the Session of 1871-72 will commence on the second Monday (9th) of October, and close on the last day of February ensuing.

MEDICAL FACULTY.

GEORGE B. WOOD, M. D.,	Emeritus Professor of Theory and Practice of Medicine.
SAMUEL JACKSON, M. D.,	Emeritus Professor of Institutes of Medicine.
HUGH L. HODGE, M. D.,	{ Emeritus Professor of Obstetrics and the Diseases of Women and Children.
HENRY H. SMITH, M. D.,	Emeritus Professor of Surgery.
JOSEPH CARSON, M. D.,	Professor of Materia Medica and Pharmacy.
ROBERT E. ROGERS, M. D.,	Professor of Chemistry.
JOSEPH LEIDY, M. D.,	Professor of Anatomy.
FRANCIS G. SMITH, M. D.,	Professor of Institutes of Medicine.
R. A. F. PENROSE, M. D.,	{ Professor of Obstetrics and the Diseases of Women and Children.
ALFRED STILLÉ, M. D.,	{ Professor of Theory and Practice of Medicine, and of Clinical Medicine.
D. HAYES AGNEW, M. D.,	Professor of Surgery.
H. LENOX HODGE, M. D.,	Demonstrator of Anatomy.

One Introductory will be delivered to the Course.

Clinical Instruction is given daily throughout the year, in the Medical Hall, by the Professors, and at the Hospitals. At the Philadelphia Hospital, containing 900 beds, instruction is free.

The Dissecting Rooms, under the superintendence of the Professor of Anatomy and the Demonstrator, are open from the middle of September.

The room for Operative Surgery and the Application of Bandages, &c. &c., is open early in September and throughout the Session, under the supervision of the Professor of Clinical and Demonstrative Surgery.

EXPENSES.

Fees for the Course of Lectures	.	.	.	.	.	.	\$140
Matriculation Fee (paid once only)	.	.	.	.	.	.	5
Graduating Fee	.	.	.	.	.	.	30

CLINICAL LECTURERS.

WILLIAM PEPPER, M. D.,	Lecturer on Clinical Medicine, and Physical Diagnosis.
JAMES TYSON, M. D.,	{ Clinical Lecturer on Microscopy and Chemistry, applied to Diseases of the Urinary Organs.
WILLIAM GOODELL, M. D.,	Clinical Lecturer on Diseases of Women and Children.
D. HAYES AGNEW, M. D.,	Professor of Surgery.
HARRISON ALLEN, M. D.,	Clinical Lecturer on Syphilis.
GEORGE STRAWBRIDGE, M. D., WILLIAM F. NORRIS, M. D.,	{ Clinical Lecturers on Diseases of the Eye and Ear.
JAMES E. GARRETSON, M. D.,	Clinical Lecturer on Surgical Diseases of the Mouth.
LOUIS A. DUHRING, M. D.,	Clinical Lecturer on Diseases of the Skin.

AUXILIARY FACULTY OF MEDICINE.

HARRISON ALLEN, M. D.,	Professor of Zoology and Comparative Anatomy.
HORATIO C. WOOD, JR., M. D.,	Professor of Botany.
F. V. HAYDEN, M. D.,	Professor of Mineralogy and Geology.
HENRY HARTSHORNE, M. D.,	Professor of Hygiene.
JOHN J. REESE, M. D.,	{ Professor of Medical Jurisprudence, including Toxicology.

The Seventh Course of the Auxiliary Lectures will begin on the last Monday in March, and terminate the last Thursday in June. These Lectures are free to all Students of the regular Medical Course.

R. E. ROGERS, M. D., *Dean of the Medical Faculty,*
University Building.

W. H. SALVADOR, *Janitor,*
University Building.

P. S.—Board may be had at from \$4 50 to \$6 per week.

* * * Alumni of this Department who are permanently settled, and other medical practitioners who desire to receive the Catalogue and Announcement regularly, are respectfully requested to send their addresses to the Dean, P. O. Box 2838, Philadelphia.

BELLEVUE HOSPITAL MEDICAL COLLEGE—CITY OF NEW YORK.

SESSION OF 1871-72.

THE Collegiate Year in this Institution embraces a Preliminary Autumnal Term, the Regular Winter Session, and a Summer Session.

The Preliminary Autumnal Term for 1871-72, will commence on Wednesday, September 13, 1871, and continue until the opening of the Regular Session. During this term, instruction, consisting of didactic lectures on special subjects and daily clinical lectures, will be given, as heretofore, by the members of the Faculty. Students designing to attend the Regular Session are strongly recommended to attend during the Preliminary Term, but attendance during the latter is not required. *During the Preliminary Term Clinical and Didactic Lectures will be given in precisely the same number and order as in the Regular Session.*

The Regular Session will commence on Wednesday, October 11, and end about the 1st of March, 1872.

FACULTY.

ISAAC E. TAYLOR, M. D., Emeritus Professor of Obstetrics and Diseases of Women and Children, and President of the College.

JAMES R. WOOD, M. D., LL.D., Emeritus Professor of Surgery.

FORDYCE BARKER, M. D., Professor of Clinical Midwifery and Diseases of Women.

FRANK H. HAMILTON, M. D., LL. D., Professor of Practice of Surgery with Operations and Clinical Surgery.

LEWIS A. SAYRE, M. D., Professor of Orthopedic Surgery and Clinical Surgery.

ALEXANDER B. MOTT, M. D., Professor of Surgical Anatomy with Operations and Clinical Surgery.

W. H. VAN BUREN, M. D., Professor of Principles of Surgery with Diseases of the Genito-Urinary System and Clinical Surgery.

BENJAMIN W. MCCREADY, M. D., Professor of Materia Medica and Therapeutics and Clinical Medicine.

WILLIAM T. Lusk, M. D., Professor of Obstetrics and Diseases of Women, Diseases of Infancy, and Clinical Midwifery.

STEPHEN SMITH, M. D., Professor of Descriptive and Comparative Anatomy and Clinical Surgery.

AUSTIN FLINT, M. D., Professor of Principles and Practice of Medicine and Clinical Medicine.

R. OGDEN DOREMUS, M. D., Professor of Chemistry and Toxicology.

WILLIAM A. HAMMOND, M. D., Professor of Diseases of the Mind and Nervous System and Clinical Medicine.

AUSTIN FLINT, Jr., M. D., Professor of Physiology and Microscopy, and Secretary of the Faculty.

SPECIAL LECTURES IN THE REGULAR TERM.

OPHTHALMOLOGY By Professor HENRY D. NOYES, M. D.

DISEASES OF THE SKIN " " EDWARD L. KEYES, M. D.

A distinctive feature of the method of instruction in this College, is the union of clinical and didactic teaching. All the lectures are given within the hospital grounds. During the Regular Winter Session, in addition to four didactic lectures on every week day, except Saturday, two or three hours are daily allotted to clinical instruction. The union of clinical and didactic teaching will also be carried out in the Summer Session; nearly all of the teachers in this Faculty being physicians and surgeons in the Bellevue Hospital and the great Charity Hospital on Blackwell's Island.

The Summer Session will consist of two Recitation Terms; the first from March 14th to July 1st, and the second from September 1st to the opening of the Regular Session. During this Session there will be daily recitations in all the departments held by members of the regular Faculty and their assistants. Regular Clinics will also be held daily.

Fees for the Regular Session.

Fees for Tickets to all the Lectures during the Preliminary and Regular Term, including Clinical Lectures	\$140 00
Matriculation Fee	5 00
Demonstrator's Ticket (including material for dissection)	10 00
Graduation Fee	30 00

Fees for the Summer Session.

Matriculation (Ticket good for the following Winter)	\$5 00
Recitations and Clinics	35 00
Chemical Laboratory (including material)	25 00
Dissecting (Ticket good for the following Winter)	10 00

For the Annual Circular and Catalogue, giving regulations for graduation and other information, address the Secretary of the College, Prof. AUSTIN FLINT, JR., Bellevue Hospital Medical College.

HARVARD UNIVERSITY.

MEDICAL DEPARTMENT—BOSTON, MASS., 1871-72.

Changes in the Plan of Study and the Requisites for a Degree.

The Regular Course of Study for persons who begin their medical education at this School, will occupy three full years. The year will begin on the Thursday following the last Wednesday in September, and end on the last Wednesday in June, and will be divided into two equal terms. The instruction will be given by Lectures, Recitations, and Practical Exercises, throughout the year. The general subjects of the Regular Course of study are:—

For the first year—Anatomy, Physiology, and General Chemistry.

For the second year—Medical Chemistry, Materia Medica, Pathological Anatomy, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

For the third year—Pathological Anatomy, Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

No student will receive his degree until he has passed a satisfactory examination in all the above-mentioned subjects. Examinations in all these subjects will be held at the beginning, middle, and end of each year.

Students who take the regular course of the School will be divided into three classes according to their time of study and proficiency. Students may be admitted to advanced standing in the regular course; but all persons who apply for admission into the second or third year's class must pass an examination in the branches already pursued by the class to which they seek admission. Students who fail in any subject at one examination may be examined again at the next examination. The regular examinations will be held in the following order:—

At the end of the first year—Anatomy, Physiology, and Chemistry.

At the end of the second year—Medical Chemistry, Materia Medica, and Pathological Anatomy.


At the end of the third year—Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

Students who began their professional studies elsewhere may be admitted to the School and become candidates for a degree without joining the regular classes; such students may take up the subjects which they have not previously studied, in such order as may be thought best, passing the examinations at the *beginning, middle, and end of each year.*

Students who do not intend to offer themselves for a degree, may join the School for one term or more, and pay for instruction in such subjects as they select. Such students will be furnished, without examination, with certificates of attendance.

Requirements for a Degree.—Every candidate must be twenty-one years of age; must have studied medicine three full years, have spent at least one continuous year at this School, have passed the required examinations, and have presented a thesis.

Fees—For Matriculation, \$5; for the Year, \$200; for either Term, \$120; for Graduation, \$30; for courses in single subjects, according to the detailed announcement.

 The plan will go into operation on Sept. 28th, 1871, but the changes above described will not affect students who have already entered the School, unless by their choice.

For further information, address

Dr. C. ELLIS, *Dean.*

114 Boylston Street, Boston.

JEFFERSON MEDICAL COLLEGE, PHILADELPHIA.

The next Annual Session will commence on the 2d Monday in October, 1871. Preliminary Lectures will begin on the first Monday in September.

FACULTY.

JOSEPH PANCOAST, M. D.,	Professor of Anatomy.
SAMUEL D. GROSS, M. D.,	Professor of Surgery.
S. HENRY DICKSON, M. D.,	Professor of Practice of Medicine.
ELLERSLIE WALLACE, M. D.,	Professor of Obstetrics.
B. HOWARD RAND, M. D.,	Professor of Chemistry.
JOHN B. BIDDLE, M. D.,	Professor of Materia Medica.
J. AITKEN MEIGS, M. D.,	Professor of Institutes of Medicine.

Fees for full course (in common with all the regular colleges of Philadelphia and New York), \$140; Matriculation, \$5; Graduation, \$30.

Board from \$5 to \$7 per week. Clinical Instruction will be given daily at the College and twice a week at the Philadelphia and Pennsylvania Hospitals. Ample material for dissection is provided under the new anatomy act.

For full particulars see the annual announcement, which will be sent on application to

B. HOWARD RAND, M. D.,
Dean of the Faculty.

ALBANY MEDICAL COLLEGE.

TERM, 1871.

FACULTY.

JAMES McNAUGHTON, M. D., President; Theory and Practice of Medicine.
 JAMES H. ARMSBY, M. D., Principles and Practice of Surgery and Clinical Surgery.
 EDMUND R. PEASLEE, M. D., LL. D., Diseases of Women.
 WILLIAM P. SEYMOUR, M. D., Obstetrics and Diseases of Children.
 MEREDITH CLYMER, M. D., Diseases of the Nervous System and of the Mind.
 JOHN V. LANSING, M. D., Physiology and Clinical Medicine.
 ALBERT VAN DERVEER, M. D., General and Special Anatomy.
 HENRY R. HASKINS, M. D., Surgical and Descriptive Anatomy.
 GEORGE T. STEVENS, M. D., Ophthalmic and Orthopedic Surgery.
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The following works have been received:—

Die "exakten" Deutschen Ohrenärzte. Von Dr. W. KRAMER, Geheimer Sanitätsrath. Berlin, 1871. (From the author.)

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ART. I.—*Membranous Enteritis*. By J. M. DA COSTA, M.D., one of the Physicians to the Pennsylvania Hospital, etc.

By this name I propose to describe a complaint which is but very incompletely known, and scarcely recognized as a separate disease by the profession. The malady in its essential features consists of a painful and obstinate affection of the intestines in which membranes or skins are voided. It is not very common, yet it is not very uncommon; for there is scarcely a practitioner who, when his attention is directed to the subject, cannot recall one or more examples; and it is not unusual to meet with references to isolated instances in our periodical literature. Unless I am much mistaken, the ailment is the discharge of the inner coat of the bowel of which Paulus Ægineta speaks; it is, I am more certain, included in the fanciful delineation of infarctus by Kaempf.¹ Good² speaks of it as diarrhoea tubularis; Todd³ describes it as follicular colonic dyspepsia; Sir James Simpson⁴ as pellicular enteritis; Cruveilhier⁵ and Laboulbène⁶ as pseudo-membranous enteritis; Powell,⁷ impressed with its painful character, calls it "painful affection of the intestinal canal;" and while preparing this paper for publication, I find that very recently Whitehead⁸ has treated

¹ De Infarctu Vasorum Ventriculi, 1751; and Abhandlung die hartnäckigsten Krankheiten des Unterleibs zu heilen, 1784.

² Study of Medicine, vol. i.

³ Cyclopaedia of Pract. Medic., vol. ii.

⁴ Obstetrical Memoirs and Contributions, vol. i.

⁵ Anat. Path. Gén., t. ii.

⁶ Recherches sur les Affections Pseudo-membraneuses, 1861.

⁷ Transactions of College of Physicians of London, vol. vi.

⁸ Medical and Surgical Reports of the Manchester Hospital for 1870.

of the malady in his notes on mucous disease, and furnished an excellent summary, mainly historical, of the subject. Other authors, too, have mentioned the disorder, as I shall have occasion further on to show; and it is my intention in these pages, by recording my own observations on the disease, by making use of the descriptions and of the fragmentary researches to be found in medical literature, and by analyzing them in the light of the knowledge derived from my own cases, to endeavour to supply a full clinical study of the affection. By thus weaving all sources of information into a connected whole, I trust to be able to prove that the complaint is one of special and distinctive features, as special and distinctive as those of almost any disease in nosology.

I shall first attempt to describe the general *clinical history* as I have learned it from experience :—

The disease is characterized, as already said, by attacks of abdominal pain, followed by the discharge of what looks like skins or membranes, sometimes coming off in the shape of moulds or long tubes. There may be but one attack; but this is very exceptional, much more generally one paroxysm is followed after an interval of months by another, and yet another; and at times the disease may become almost continuous, with occasional distinct exacerbations. A week, in my experience, is the shortest time for an attack to last, and distension, sense of burning, colicky pains, and at times a sluggish state of the bowels, precede the discharge by days. After this has taken place, the abdominal soreness lessens, the feeling of rawness passes off, and the patient is well, though he is apt to have a coated, flabby tongue, to remain dyspeptic, and be readily fatigued. If he have lost flesh during the seizure, he regains it entirely, or to a great extent, and, at no time, unless in an aggravated case, does he emaciate much. From the history of the ailment, and the amount of abdominal soreness during the attack, we might expect febrile phenomena, but the skin is prone to be cool, the hands and feet are often moist and clammy, and the circulation feeble and languid. Palpitation, particularly of the abdominal aorta, is common. Between the attacks the bowels are irregular, sometimes constipated, at others loose; and tenesmus is often complained of. The patient suffers from sore mouth, from papular eruptions, from boils, or even carbuncles; he has an unhealthy complexion, and almost invariably exhibits some signs of his nervous system being disordered. His bladder sympathizes in the intestinal derangement; it is irritable, and we not unfrequently observe that large quantities of mucus are passed. All these symptoms come out in bold relief, during an attack, but in a slight form they may be noticed in the interval. After a few seizures the patient may gradually recover, yet is never robust, or the disorder becomes persistent. I repeat that in the rarest of instances only is it a short one.

To give a few illustrative cases :—

CASE I.—Miss S., thirty-one years of age, a lady of nervous tempera-

ment and of highly cultivated mind. She has had for years a movable tumour in the abdomen, always more or less tender to pressure, and which has been variously held to be a displaced right kidney, a mass attached to the omentum, or an outgrowth hanging by a stem from the ovary. The tumour was first noticed in Jan. 1860; at the expiration of two and a half years the cord of attachment seemed to shorten, the movements became less troublesome, and it ceased to be as annoying, being easily forgotten, except when the surrounding tissues were sore. At one time it rested on the crest of the ileum, but she pushed it away from there. Shortly after the swelling attracted attention, the spine was perceived to be irritable in the dorsal region, and a feeling of soreness and discomfort was experienced below the shoulder-blades, not relieved until in March, when a mass of jelly-like substance was voided from the bowels; and for a few days shreds of the same substance accompanied the ordinary discharges. From this time on the distress and soreness in the back began to abate, and the action of the bowels was regular. In the winter of 1860-61, there was a similar but more prolonged attack; in the winter of 1861 and 1862 an attack not so severe; and the year following, one so slight as not to occasion any prostration.

In December, 1864, Miss S. suffered from distressing colicky pains, ill-defined chills, also soreness in the side, which symptoms continued until the end of January, 1865, when a dreadful neuralgia seized sometimes upon one part of the body, sometimes upon another. In April, 1865, the peculiar gelatinous or membranous discharge occurred several times within two weeks. Then everything began to mend; yet the soreness did not leave the pit of the stomach and the lower part of the right hypochondrium all summer. In October, 1865, another paroxysm commenced. There was intense pain in the whole right side, shoulder, and arm, with chilly sensations recurring for weeks, and colicky pains constantly setting in for three months; the skin became so sensitive that for weeks the touch of a camel's-hair brush used in applying croton oil was excruciatingly painful. No permanent relief was experienced until April, 1866, when the jelly-like substance from the bowels was thrown off. A good deal of irritability of the bladder was present at this time, and has never since been entirely relieved.

In December, 1866, soreness in the side began again with colicky pains; and in January, 1867, distressing faintness was noticed whenever attempts at eating were made, excepting about eleven o'clock in the morning. By February most of the old symptoms had reappeared, save the chills. In April the discharge came away in the form of a tube, about seven inches in length; in all previous instances when floated in water, it had shown only pieces of thin membrane. The passage of the tube was followed by the usual relief and comfort until the 1st of July; but since this time, all during the summer, the membranous formations recurred, and were voided sometimes four times a week without the alleviation which had generally happened.

I saw Miss S. in October of the same year, just prior to a discharge of considerable amount of the membrane, and while she was suffering great pain. She told me that she had been losing flesh recently, and had been troubled with acidity and want of digestive power, no fruit or vegetable digesting as well as bread or meat. "There is," my note says, "general soreness through the bowels, with several tender spots in the hepatic region, and towards and at the right iliac fossa is fulness with tenderness. This

is the spot which has generally been affected in the attacks, and when all of the membrane has passed away, the swelling and tenderness subside. The tender spots over the hepatic region, more especially at the inner edge of the viscus, are permanent, and I detect a movable tumour having somewhat the shape of the kidney, which can be forced up under the ribs. I could, however, not find any obvious diminution of dulness on percussion in the right renal region; the sound over the tumour was tympanitic, though not as distinctly so as that of the surrounding parts. Below the ribs, just to the right of the spine, is a point which is always sore to the touch. There is no enlargement of liver or spleen; no abnormal ingredients are discerned in the urine; at times it contains much vesical epithelium. Marked throbbing of the abdominal aorta exists, but neither thrill nor lateral impulse is found; a soft murmur is occasionally heard on strong pressure with the stethoscope. The abdominal palpitation is apt to come on in spells, just before or during an attack of membranous discharge."

From the time I made these observations, in October, 1867, I have seen Miss S. very often. There was at first some cessation between the attacks, with corresponding improvement in health, but in the last two years the discharge has been nearly constant, about one month being the longest time which she was free from it, and lately a rest of three weeks was hailed with much satisfaction. All that was told me of her attacks prior to my attending her, and all that I have above mentioned as noticed when she was first under my charge, I have found over and over again. In addition, I may mention a few other features. She often predicts a paroxysm by blueness of the nails, and by tingling or pain at the tips of the fingers, and aching of the external ear, or by a sensation of chilliness in the right leg; and she is never wrong. No single decided attack has occurred without severe pain, though when merely small quantities of membrane are voided for a considerable time, the pain is not extreme; but at all times flying abdominal pains are apt to occur, and soreness always exists, and varies somewhat with the exact character of the discharge. Just before the passage of the membrane, the pain is stated often to be like that in a very marked attack of bilious colic. The signs of disorder of the nervous system are encountered more particularly during an attack. I have repeatedly noticed acute neuralgic pains in the dorsal spine passing up to the cervical vertebræ; and hysterical insensibility, tetanus, hysterical aphasia, have I been able to study in the case of this lady, so self-controlled under most circumstances. The mouth is often full of little white ulcers; the tongue always flabby, showing the indent of the teeth, and coated. The little ulcers are particularly common when an attack is brewing. The membrane discharged is sometimes like grape-skins, at others like long tubular moulds, and its colour is whitish, grayish, or yellowish.

It is often preceded by passages of glairy mucus, by burning pain in the spine, different from the usual steady aching there, by a sensation of burning in the abdomen, by increased acidity of the stomach, and by four or five days of constipation, requiring daily enemata. An examination of the rectum with a speculum, by which an excellent view was obtained up to the sigmoid flexure, showed, during the attack, the membrane, angry-looking, very red, and apparently thickened, but no ulceration could be discerned. She has had prolapsus and ulceration of the neck of the womb, for which she has been often treated. Touching the cervix led several times to the discharge of long strings of mucus. Pessaries press on the bowel, and become intolerable; she can rarely bear them for any length of time,

though they have several times been introduced by very skilful obstetricians.

During her long illness almost every conceivable plan of treatment has been resorted to, chief among them the mineral acids, arsenic, copaiba, turpentine, iron, cod-liver oil, oxide and nitrate of silver, muriate of ammonia, sulphate of zinc, tar-water, chlorate of potassa, both internally and by injection, corrosive sublimate, and small but steadily continued doses of blue pill for eight weeks, which had the effect of making her feel more comfortable, and her head clearer, but failed to check the disease. She has sometimes used soda extensively and continuously on account of the heart-burn; while she was taking the subsulphate of iron or chlorate of potassa this symptom was better. She is as well nourished as possible; vegetables she digests badly, and eats sparingly. She uses large quantities of milk; but the attempt at an exclusive milk diet weakened her much, though she took a large amount. At one time she thought the Rockbridge iron alum water benefited her.

In the preceding case I have recorded one of great severity and almost steady continuance. In the following instance, the disorder, though of still longer standing, happened in a person of far less delicate constitution, and came on as it were in paroxysms, in the interval between which the general health was good.

CASE II.—Mary G., aged twenty years, umbrella-maker, single, admitted 12th of January, 1871, into the Women's Ward of the Pennsylvania Hospital. Had acute rheumatism at age of five years. Father died of phthisis. She has been subject to diarrhœa since her sixth year, indeed from that age has not at any time been more than three or four months without it. It began without assignable cause, and seemed to be always aggravated by getting her feet wet, or catching cold. Never had malaria. Usually spent three or four months of the summer in the country, and was then better as regards the diarrhœa, notwithstanding that she ate fruit freely. From the first she has averaged from ten to twelve stools per day. They were always small in quantity, dark-coloured, and composed largely of mucus; never contained blood nor were "tarry." They were usually preceded by sudden sharp pain in the region of the umbilicus, and were at times accompanied by tenesmus. The pain was relieved by the passage of the mucons stools, but an attack always continued for some time, and with it more or less abdominal pain. General health has remained fair; only occasionally did exacerbations of the disease oblige her to leave her work. Has been frequently under medical treatment, with occasional temporary improvement. Her treatment in the hospital has consisted principally of careful regulation of the diet, and one-third of a grain doses of nitrate of silver three times daily. Under this treatment she improved considerably, and by the 4th of February had an average of three passages daily.

A note taken at that time says: Tongue only very slightly coated in centre; has vomited occasionally; no marked digestive symptoms. Taking food does not induce diarrhœa. No tenderness over colon or in back; never passes seybala.

On the 7th the movements were reduced to four in twenty-four hours. She stopped the nitrate, and took oxide of silver half a grain three times daily.

Feb. 16. For several days has had one normal movement in the day.

No digestive disorder, though occasionally colic; stop silver, take sp. lavand. co. ℥ss. t. d. Stools have continued to consist chiefly of mucus, containing also whitish masses of a cheesy consistence resembling curdled milk. These are for the most part intermingled with fecal matter.

23d. Goes out well; movements natural, about once a day; no more pain; looks well; good colour. Has had no return of the disorder from the bowels.

Having given these cases as illustration of many points alluded to in sketching the general clinical history, I shall now examine some of the symptoms in detail, beginning with those which are the less obvious manifestations of the disorder.

First, of the symptoms referable to the *nervous system*. This shares largely in the affection, and irregular nervous manifestations, hysterical often or of hysterical type, are very common; headache, impairment of memory, and defects in sensation, or disorders of special senses happen, and hypochondriasis is frequent. One of my patients, a man of great intelligence and culture, and who is very subject to attacks of extreme mental depression, alternating with increased mental activity or with excitement, gives me this history of himself:—

CASE III.—From about 1840, I have noticed that the mucous system was greatly disturbed. Often great soreness was felt, as though the intestines were excoriated, and mucus is passed sometimes in clots, sometimes in strings upon the feces, and occasionally tinged with blood. On one occasion, after a voyage from New Orleans to Texas, during which I had suffered much from sea-sickness, I discharged great quantities of thick mucus, long, thick ropes of it, as it were. Often my scalp becomes so sensitive that each hair, as it were, becomes painful to the touch; all the time there is a ringing in my ears, as though I were near a waterfall; my eyes have a bleached appearance; the expression seems almost to have left them, and at night the vision is so impaired that I need a much stronger light than when well. In the diseased state, while intensely averse to the things which in health interest me most, I can find relief in chess-playing, also in algebraic problems of the most intricate kind, in reading, etc., filling up as far as possible every moment so as to leave no time for my mind to prey upon itself. During all this period the whole system seems to be torpid and sluggish, the pulse being slow and feeble; my appetite is irregular, but usually good, and my weight increases, the flesh being flabby, and face somewhat bloated.

Besides these manifestations we may find the irritability of the nervous system manifesting itself in irregular muscular motion. Thus convulsions, chorea, partial palsies, hysterical tetanus (as in Case I.), may be encountered.

The *urine* is generally high-coloured, and apt to contain excessive amounts of urates. I have never found it distinctly albuminous; but we sometimes meet with considerable quantities of epithelial cells; and there is often a frequent desire to void it.

The *uterine functions* are often irregular; defective menstruation is common, so is leucorrhœa, attended or not by inflammation of the neck of the womb.

The *dyspepsia* accompanying this membranous enteritis is most marked and persistent. It is aggravated at the time of an attack, perhaps worse just preceding it, but the patient is never wholly free from the gastric derangement. It presents all the ordinary, and again the most uncommon symptoms of indigestion; but a feeling of distension and oppression, and great acidity are usually its most striking features. The tongue sympathizes with the state of the stomach. I have often known it denuded of its coating in patches, and tender and red; or it is flabby and pale, indented by the teeth, and heavily coated at the back. Vesicles which break and leave superficial ulcerations are often seen on the inside of the lips and on the gums.

As constant as the dyspepsia is the *abdominal pain*. When the patient is free from an attack it may be very slight; or it is a feeling of uneasiness and soreness at a particular point, with occasional griping and tenesmus. But during or just preceding the discharge of the membrane the pains are like those of a severe colic; a feeling of rawness also in the bowels is complained of, and there is very considerable tenderness. The pain may be so violent as to be the one symptom to which the patient alludes, and for which he craves relief. The seat of the pain is frequently just above the umbilicus. It is more severe, I think, before the membrane is discharged, and while probably it is being loosened, and then subsides considerably, but it may persist acutely all during the attack. Unless its cause is detected it is very puzzling to both patient and physician, and may lead to curious consequences, and modes of treatment not the most acceptable to the sufferer. It certainly did so in this case.

CASE IV.—M. C., eight years of age, a bright-eyed active little boy, complained much of abdominal pain, occurring in paroxysms, and of desire to go to stool. The mother gave the child several laxatives; but finding the pain continue when she had made up her mind that after administering a dose of oil it ought to cease, and the little boy being unwilling to learn his lessons and go to school, she commenced beating him. This treatment, too, had no effect on the pain. One day after it had been carried on by means of a slipper with rather more than usual vigor, the boy went to stool, and passed, what she then remembered to have seen in his discharges before, large white masses and bands. Her physician was sent for, and at first sight thought them to be parts of a tapeworm, but, being doubtful, asked me to examine into the matter with him. We found the abnormal substance largely composed of mucus, and without distinct texture microscopically. The little patient slowly recovered, and, I believe, the attack has not recurred.

To consider the most significant symptoms, those connected with the *membranous discharge*. This may come away with every movement of the bowels, almost continuously for months, perhaps years; but it is much more common as happening in paroxysms of the duration of a few weeks. Even then it is not in every movement from the bowels that we find the peculiar material. Generally there is a considerable amount voided with

great relief to the pain and other symptoms, and then many stools are free from it, yet small quantities are passed until the attack is over. In character the concretion consists of membranous shreds or tubes, or sometimes of perfect casts of the bowel. One of my cases discharged a tube of a foot in length, and a complete mould of the intestine. Yet the membrane is not generally so perfect, being torn into shreds of about three or four inches in length, and of an eighth to a quarter of an inch in thickness, or broken up transversely into irregular masses. In colour, even after they have been cleansed in water, they are usually yellowish or grayish, sometimes, however, white. The whiter they are the firmer they are apt to be; at times they are whitish with many yellow points intermixed; and one of my patients has repeatedly told me that before these are voided she feels more pain, and has greater subsequent internal rawness. There is a clear jelly-like variety, or one like the white or the yolk of an egg, which is the least painful, and is apt, indeed, to precede the discharge of the more solid kind. The fecal passages which attend or occur between these strange stools may be either natural, loose, or constipated.

I have examined many of these concretions microscopically, and have found them to differ but little from each other. They exhibit, irrespective of extraneous matter, a transparent amorphous basement substance, here and there indistinctly fibrillated, and having imbedded in it granules, free nuclei, and small, shrivelled, irregular, and rather granular cells. There are not many well-marked epithelial cells; and white or elastic fibrous tissue or elongated fibre-cells I have not met with, excepting occasionally a few of the latter. At times homogeneous bodies of irregular outline, and denser than the matrix in which they are discerned, are seen, but they may have been accidentally introduced. On the addition of acetic acid the granules in the smooth matrix become much more transparent, and filaments of mucin are very obvious. Still even under these circumstances I have found no fibrous tissue. Yet it is fair to state that Dr. Andrew Clark¹ in examining specimens speaks of elastic fibres; also of perforations in the matrix consisting of well-defined round or oval openings surrounded by elevated margins formed of closely grouped cylindrical cells. Dr. Farre² describes the formation as of confervoid kind. Beale³ in a case found the casts composed of very firm mucus, in which numerous cells of epithelium from the large intestines were imbedded; whereas Kohlrausch's examination, referred to by Henoeh,⁴ accords more with my own in representing the epithelial cells as sparingly present.

The chemical reactions of these membranous masses are as follows:

¹ Transactions of the London Pathological Society, vol. ix.

² Transactions of Microscop. Society.

³ The Microscope in Practical Medicine, p. 195.

⁴ Klinik der Unterleibskrankheiten, iii. p. 291.

On careful and repeated washing they become quite white, suggesting that the yellow colour they may present is entirely or almost entirely foreign matter. They are insoluble to a great extent in water, though water melts them down into a mucilaginous fluid, and they decompose. In very weak alcohol and water the substance breaks up largely, though not at once completely, portions which look like the skin of a grape preserving their structure for a considerable period. In pure alcohol, or in half alcohol, half water, the membranes shrivel somewhat, but remain recognizable for a long time; they are preferably kept in rather less than half alcohol. On continued soaking in alcohol they become stringy, but regain their former gelatinous consistence when placed in water. Iodine turns them yellow; they are well preserved in carbolic acid, and become somewhat firmer and still whiter.

Dr. Horace B. Hare, our pathological chemist at the Pennsylvania Hospital, kindly analyzed with much interest several specimens. Here is his report:—

“The casts, on thorough washing with water, become perfectly white, losing their original discoloration. When removed from the water, they present the appearance of a structureless, transparent jelly; in other words, they resemble closely ordinary muens or uncoagulated egg albumen. Immersion in alcohol of 90 p. c. causes them to shrivel, but even after two weeks of such immersion, on being placed in pure water, they assume their original appearance, and colloid consistence. When boiled in water they contracted somewhat. This change was permanent. Incinerated on platinum foil, they leave a minute trace of white alkaline ash. They contained no sulphur. Water in which they had been soaked for some hours at ordinary temperature, gave no precipitate with ferrocyanide of potassium, corrosive sublimate, acetic acid, or nitric acid. These reagents caused no precipitate in water in which the casts had been boiled.

“On boiling in water, the casts shrivelled slightly, and would not afterward resume their former appearance. They do not dissolve in water.

“Casts dissolved readily in solution of caustic potassa. This slightly alkaline solution gave no precipitate with ferrocyanide of potassium, but the addition of acetic acid produced a faint cloud—as did also tannic acid. Bichloride of mercury, however, produced no cloud. On adding nitric acid in a test-tube, the casts shrivelled very slightly, and on heating dissolved with evolutions of orange-coloured fumes. The resulting solution was yellowish. Acetic acid dissolved them to a great extent. In the acetic-acid solution no precipitate was formed by ferrocyanide of potassium, nor by bichloride of mercury. Strong pure sulphuric acid dissolved them without causing shrivelling. The solution was colourless. The careful addition of water, guttatim, was followed by the appearance of a pale greenish-yellow colour, but no cloud. Tincture of iodine, with and without the addition of sulphuric acid, showed no peculiar reaction.

"It was found that mucus taken from the posterior nares and pharynx responded in much the same manner to similar tests.

"After digesting the casts for several hours in a solution of nitrate of potassa, no fluid was obtained, giving a coagulum with heat or nitric acid, or acetic acid. This, so far as I can discover, excludes fibrin. Treatment with hydrochloric acid resulted in a colourless solution. From the solution in acids, no precipitate was obtainable on the careful addition of alkalies. Ether caused slight shrivelling. It extracted no fat.

"The above is applicable to a great majority of the casts. In one or two instances, however, a slight cloudy precipitate on the addition of ferrocyanide of potassium, and the bichloride of mercury, would justify the inference that a trace of albumen was present. It is fair, also, to infer that the casts were composed, in the majority of instances, of mucus; that one or two contained a trace of albumen, and that they contained no fibrin."

This analysis certainly shows how largely the membranes are mucus, or at least a substance of identical chemical composition. Perroud¹ (referred to by Whitehead, from whom I here quote, as I have not access to the paper) found that nitrate of silver produced a black stain, nitrate of mercury a carmine colouring; nitric acid gave rise to a decided cloudiness, but by boiling with an excess of acid the liquid became again transparent. The conclusion he arrives at from all the tests employed is, "that the membraniform mucous concretions are voided with a small quantity of albumen." He further holds, that they consist of the same substance as that of which the epidermis is composed.

Of the *structural changes* in and *pathology* of this affection we know very little. I am not able to state from personal inspection if there be any constant lesion, as, in the only case coming under my own knowledge which terminated fatally, an autopsy was not obtained. Simpson refers to a case of phthisis attended by Abercrombie, in which the patient had passed large quantities of "membranous crusts or tubes," and in which the mucous membrane of the colon was covered with an immense number of small spots of a clear white colour, which were vesicles, that, when punctured, discharged a small quantity of clear fluid. In a case of Dr. Wright's, seen also by Sir James Simpson, the patient died in an extreme state of marasmus, and the mucous membrane of the colon, and of the lower portion of the small intestine was everywhere studded with a thickly-set papular eruption; hence the disease is described by Simpson as analogous to certain chronic eruptions on the skin, as a chronic pellicular or eruptive inflammation of the intestinal mucous membrane.²

But it is very questionable if a morbid state of this kind exists in the majority of instances. Indeed, it is doubtful whether we can consider the

¹ Journal de Méd. de Lyon, 1864.

² Obstetrical Works, 1st series, p. 279, Am. edit.

affection as originally an inflammation at all. Where inflammation occurs, is it not secondary rather than primary, the result rather than the cause? Is not the true trouble in the nervous system, in the nerves presiding over secretion and nutrition in the abdominal viscera? The depressed condition of the general system, the severe pain, the recurring character and obstinacy of the complaint; the frequent association with uterine disease; the constancy of signs of disordered nervous manifestation; the association often with similar discharges from other outlets, point to a deeper, more general cause than an enteritis, or a morbid condition of the intestinal mucous follicles. Still, we must admit that from whatever cause the secretions of these glands become perverted, it is very likely that, during the height of the attack, inflammation exists in the membrane around them, which, in persistent cases, may become chronic. Enough, however, has been said of the chemical and microscopical characters of the discharge to make it apparent that this is not, as would be generally supposed, plastic or coagulated lymph.

But what is the *exciting cause* of the malady, and how apparently does it begin? We find here also very great difficulty in arriving at any conclusion; and opinions are almost as various as there are observers who have reported cases. To mention a few: Grantham¹ considered the affection caused invariably by the exhibition of mercury conjoined with the constant use of aperients; and "Colon," who writes to the *London Lancet*² for information on the treatment of this most obstinate affection, speaks of two cases, one of which he attributes to the cause just mentioned. But this explanation does not meet many instances; and I am very sure that in a number of the cases I have seen no such cause had been at work. Irregularities in diet are assumed by some; transmitted irritation from the uterus or prostate gland by others. Habershon³ states that he has observed the malady following severe disease of the intestines of a dysenteric character, and it is sometimes associated with a state of chronic congestion of the liver; again, it is often perpetuated by the presence of hæmorrhoids and by ovarian disease. In Case V. of my cases, there certainly was congestion of the liver with piles; while in Case I. it seems impossible to avoid connecting the movable tumour, probably a floating kidney, with the disease. It either acted by pressure on the intestine, or, as I think more likely, by irritating the nervous filaments. But it is most probable that in the majority of instances there is a constitutional defect lying back of the trouble which seems to have called the malady into existence.

The disease under consideration affects the colon preëminently. Yet not always, nor do I think that even in the same person, it always disturbs

¹ Facts in Medicine and Surgery.

² Oct. 15, 1869.

³ Diseases of the Abdomen, second edition.

the same part of intestine. It is much more common in women than in men, and may be observed at all ages; but most cases happen in middle age. In young children it is extremely rare, unless we admit that the so-called mucous disease, which Eustace Smith¹ treats of, and in which large quantities of free mucus are found in the stools, is the same complaint. But shreds or membranes are not mentioned as occurring. On the other hand, Theodore Clemens² describes as an acute affection an intestinal croup of children in which fibrinous exudations are voided, after the evacuation of which a cure follows rapidly. Intestinal catarrh, he states, often precedes the disorder. The same author mentions that the domestic animals, cows and pigs particularly, suffer frequently from a croupous affection, which he regards as closely related to the intestinal croup of children.

In examining into the *diagnosis* of the malady, this becomes easy if we bear in mind the essential features; and if we recognize that the disorder, as I trust I have been able to prove from the foregoing statements, is one as clearly marked and obeying its own laws as definitely as any of those with which we are better acquainted. By thus viewing the disease, remembering the exact character of the stools, their very rare admixture with blood, the pain, the absence of fever, the constitutional depression, the state of the tongue, the recurrence of the complaint for the most part in distinct attacks, we shall avoid mistaking it—as Valleix³ has evidently done—for dysentery; we shall not confound it with the occasional mucous coverings on the feces, discharged by persons who are habitually constipated; or with the mucous stools of some forms of chronic diarrhœa; or with the shreds of whitish membrane which persons affected with fissure of the rectum often pass—and with reference to this disease, should any doubt exist, an examination with the rectal speculum will clear it up. Discharge of fat from the bowels is much more likely to prove a source of error; but irrespective of the different clinical history, and of the disease of the pancreas, or liver, or upper bowel, which, though not always, is yet very commonly combined with fatty stools, a microscopical examination will show their nature.

As the membrane may come off as a hollow tube and with the exact markings of the intestine, even with the moulding of the valvulæ conniventes, there have been mistakes made by supposing that portions of the bowel have been discharged. Errors of this kind, however, scarcely belong to our day; but the reading of Morgagni's 31st epistle;⁴ or of the entertaining letters of Lancisius⁵ will prove how often it was formerly committed even

¹ Wasting Diseases of Infants and Children. Second edition, 1871.

² Quoted in Schmidt's Jahrbücher, vols. 106 and 107.

³ Tome iii., p. 10, 2ième edit.

⁴ De alvi profluviis agitur incruentis, et cruentis.

⁵ De Triplici intestinorum Polypo, 1710. We have in this work an excellent refutation of this then common error, and an examination of the still more common

by the learned—as by Lipsius. Very constantly, even to the present time, these membranous conerctions are supposed to be worms. Indeed, the resemblance may be a very close one, and it is only after floating the ribbon-like bands in water or examining them with a magnifying power that we feel certain of their true character. Here is a case in point :—

CASE V.—I treated with Dr. Van Pelt, in 1866, a man, fifty years of age, who had been ailing for about two months. He was intemperate and had suffered much from piles and prolapse of the bowel. For three or four weeks before I saw him, he had much difficulty in making water, tenesmus, pain in the neighbourhood of the umbilicus, somewhat to the left, and considerable abdominal tenderness. He also had loose, irregular, frequent, and at times blood-streaked discharges, but he was not relieved of the distress until he passed a long, grayish-yellow membranous substance or band, divided into two pieces, the longest about eight inches long. This he declared was a piece of a tapeworm, and gave it to Dr. Van Pelt as such. In truth its rough appearance was that of a worm; it even seemed jointed: but we examined it under the microscope, and found it composed of muens and imperfect epithelial cells. He passed membranes and shreds for about two weeks, then convalesced; had a slight attack six weeks afterwards, with some abdominal pain, and was again relieved by the discharge of membrane. He remained weak after this attack, easily chilled, his muscular powers deficient, and dyspeptic. He became much exhausted and lost flesh in July, and died worn-out in the hot weather, within two months after the second seizure. Throughout his illness he suffered much from headache and mental depression.

The disease under consideration bears a certain likeness to diphtheria, and it is well known that in diphtheria we may have the bowels affected. But here the disorder is more apt to show itself in diarrhœa, or in deposits and ulcerations in the large intestine occasioning the signs of dysentery, whereas the discharge of false membranes is rare. Trousseau, who in a general manner includes intestinal diphtheria under the head of cutaneous diphtheria, speaks of it more especially as anal; we have therefore in the seat of the malady something to guide us. I doubt if the characters of the membrane will aid us much. The microscopical features of the membrane certainly would not be likely to be of much avail; for ordinary diphtheric deposits consist also largely of a transparent homogeneous substance, entangling altered epithelial cells and nuclear bodies; perhaps the diphtheritic membrane would be found to be more markedly corpuscular, but as regards intestinal diphtheria, I cannot speak from positive observation. Chemically, there ought to be a difference; but I do not know that the discharge

one of supposing the membranous discharges to be worms. There is, besides, a case described most interesting as bearing on the symptomatology of the affection. He treats a woman with pain in the side and abdomen, annoying cough, acid breath, some fever; he suspects worms, gives her a vermifuge, and she passes by the bowel "*corpus album, longissimum, compressum, crebrisque quasi inter-nodiis discriminatum, una cum quibusdam lumbricis de natura teretum. Atque post hujusmodi evacuationem dolor, tussis, ac febris illico sedata sunt.*"

in an undoubted case of intestinal diphtheria has ever been analyzed; and on the whole we have to trust to the history of the case, the graver constitutional symptoms, the epidemic nature of the malady, and the evidence which shows that the intestinal affection is merely part of a general, plainly marked morbid state. The latter point is the one, too, which helps us greatly in distinguishing those affections of the bowels with croupous exudations described as "secondary croup of the intestinal membrane"¹ occurring in pyæmia, in scarlet fever, in puerperal and tubercular diseases, and occasioning more particularly the symptoms of dysentery.

Before dismissing the consideration of the diagnosis of this strange membranous enteritis, I wish to insist upon the necessity of inquiring, in every case of anomalous nervous symptoms, particularly when happening in hysterical persons, in which there is any abdominal pain, into the possible existence of the malady we are discussing. Let the patient's attention be directed to the matter, and the stools be carefully examined. The prominence of the signs of disorder of the nervous system may throw those of the digestive apparatus into the shade. I know this from personal observation; and Copeland² speaks of an "almost singular case" of hysteria, amounting occasionally to catalepsy, in which discharges of false membranes from the bowels, and sometimes from the uterus took place.

Do cases ever happen, or rather do attacks in cases happen, in which the membrane is not found in the stools, or is scarcely formed, certainly not in a manner and in extent sufficient to be recognizable in the feces? I believe this possible; and the diagnosis of such cases is only attainable by laying stress on the general grouping of the symptoms and by a process of exclusion. It is, however, greatly facilitated if we have ever seen the patient during a seizure in which the membranous discharge was discernible.

A case in point (Case VI.) is that of a gentleman I attended, who has had repeated seizures of the kind described, at intervals usually of five or six months. Only on one occasion has he passed distinct membranes, and his statement is valuable, for he is a very intelligent man, who watches his own case closely. Here is yet another case:—

CASE VII.—Mrs. N., about 35 years of age, seen with Dr. Turnbull in the autumn of 1869, and again in June, 1870. When I first examined her she had been sick for several days. At the onset of the attack there had been vomiting, but the chief symptom was severe pain associated with tenderness, particularly in the course of the ascending and beginning of the transverse colon. The tongue was coated; there was no fever, but a quick pulse. The disorder seemed to have had a very acute commencement; and after the first day the pain, which required large doses of morphia

¹ Bamberger, *Krankheiten des Digestions Apparates*, p. 418; also Henoch, *op. cit.* iii. p. 252.

² *Dictionary of Practical Medicine*, art. *Inflammation of Intestines*.

hypodermically for its relief, lessened greatly, and she passed considerable quantities of whitish membranes and shreds. The bowels had been constipated, but had been opened by injections and a dose of oil. The membranes examined microscopically consisted of a very slightly fibrillated structure, some epithelial cells, enclosed in a transparent groundwork in which acetic acid developed shreds of mucin. She first suffered early in 1869 during the latter months of pregnancy; the pain in this seizure, too, was in the right iliac region, and was at one time thought to be due to the pressure of the fœtus. A second, and similar attack happened while she was away from the city; her stools on that occasion were not examined.

The attack in 1869, in which I saw her, lasted a week. She remained well, excepting a little dyspeptic, for seven months, taking steadily chlorate of potassa, chloride of iron, and subsequently muriate of ammonia. She then had another seizure with almost identical symptoms. But this time the membrane was not seen in the passages. In this, as well as in the preceding illness, we examined the rectal mucous membrane with a speculum, and found it highly injected, of deep red colour; there were no signs of a fissure. Under iron and bitter tonics principally, Mrs. N. continued well until March, 1871, when she had an attack of five days' duration, and again in April another, lasting one month. In this the pain, Dr. Turnbull informs me, extended higher up, and there was jaundice. The jaundice passed away, but her dyspepsia has been lately very marked. In her last two attacks, also, no membrane or shreds were detected in the stools.

It may be objected to this case that it is not a pure one, that some other disease exists. This is possible; I did not see enough of the patient to speak on this point too decidedly; but I am of the impression that there is no other malady. At first sight the jaundice may seem entirely against my view. But it is really not. In Powell's¹ cases jaundice was common, and he lays particular stress on the disorder simulating the passage of gall-stones. To arrive at a conclusion he had the pan filled with water, and the feces stirred in it long enough to see if biliary concretions rose to the surface. Then the water was poured away, and repeated similar effusions were made as long as anything appeared to be dissolved. The residue was then examined and found to contain the adventitious membrane, which in his first case passed in the form of a perfect tube.

The *prognosis* is not a favourable one; at least not in so far as a complete recovery will probably result. The more acute the case, the more likely is it to do well. The subacute cases have a greater tendency to recur, and after several recurrences a peculiar cachexia is apt to be established which it may be impossible to eradicate, and as an attendant the most marked anæmia will be witnessed. Still, even in its most chronic illustrations, it is not a very fatal disease, rather one producing persistent ill health. The record of Case I. shows how long the disorder may continue, and Broca² mentions two cases, one of which had lasted ten, the

¹ Loc. cit., p. 107.

² Bulletin de la Société Anat. de Paris, 1854.

other fifteen years. I have alluded to the fatal cases referred to by Simpson; one of these, however, was tubercular, and death can scarcely be said to have resulted from the intestinal affection. Nor do I think that Case V. died in consequence of this; the man had been for a long time very intemperate, and had most likely a damaged heart and liver. Whitehead quotes Frederic Hoffmann as stating that the malady may lead to sudden death. This seems most improbable, but I have not been able to find the case referred to so as to analyze it.¹

The *treatment* of the malady must be discussed from a twofold point of view. 1st. The treatment most suitable during the attack; 2d. The treatment to prevent recurrence, or in protracted cases to keep the membrane from constantly forming. Now as regards the first, we almost invariably have to resort to opiates, and I have often used morphia hypodermically. Besides, rest in bed, the application of water to the abdomen, slight purgatives, such as oil or Saratoga water, and an easily digested diet, are to be prescribed.

When the more painful stage is over, the treatment becomes much the same as that required to fulfil the second indication, in other words, it is not only a treatment to remove the accumulated abnormal substance, but to prevent its forming; and I think if we see the patient not too late in the malady, with care and persistence we may succeed, though never very rapidly. I will give an outline of the plan that I believe the most advisable:—

And first of the diet. It should be nourishing, but not excessive in quantity; for the patient's digestion is feeble, and he can only digest a certain amount, and as the disorder may be partly in the small intestine and the abnormal substance may line the villi, it is very evident why, quite irrespective of the gastric dyspepsia, he can only appropriate a certain proportion of food. As a rule, I order eggs, milk, bread, and solid food, which is better borne than liquids; tea, coffee, and alcoholic stimulants are only to be permitted in very small quantities. As regards vegetables, we must observe whether they pass unchanged in the stools. Fresh meat juice is serviceable; from an exclusive milk diet even faithfully carried out I have seen no good.

Great attention should always be paid to the action of the skin, and baths followed by systematic friction are very useful. Occasional counter-irritation over the abdomen appears to be productive of some benefit, yet a large blister on the abdomen has been kept open for six months without decided results.² Daily moderate exercise should be recommended, particularly in cool weather, and, if possible, an occasional trip to the mountains,

¹ Said to be Observ. IX de Morb. Infant. Med. Ration. V.

² Jonathan Hutchinson's Report of Dunhill's Case; Transact. Path. Society of London, vol. ix.

and living out of doors in the bracing mountain air should be insisted upon. Thus everything that can be done to invigorate the digestive and nervous systems should form an essential part of our therapeutics.

One of the most important points in the treatment of these cases is to prevent the patient from using purgatives. Only when the bowels become constipated should they be employed, in the shape of rhubarb with a little ipecac and belladonna, or of oil, or of a mild saline. Still there are cases in which blue-pill suits best (as in Case I.), is followed by the relief of abdominal swelling and tension, and gets rid most speedily of the morbid substance, for a time, too, preventing its reaccumulation. And it is fair to say that some favour purgatives as a steady treatment. Thus Powell states that he found the most advantageous practice to consist in the persistent use of a mixture of the compound infusion of gentian and infusion of senna, with the addition of from 10 to 20 minims of liquor potassæ, repeated so as to produce four or more stools in the twenty-four hours. Copeland endorses this practice, and cites, moreover, a conversation with Sir Benjamin Brodie, in which this gifted surgeon told him that he had occasional recourse to active purgation, alternating with small doses of cubebs.

With regard to medicines given to prevent the formation of the membrane, I have seen the best results from a steady course of iron, particularly of the perchloride. Cod-liver oil may aid in some cases, but it is generally not well borne. Acids sometimes appear beneficial. Habershon recommends the nitro-muriatic acid with henbane and vegetable infusions. Clark¹ speaks highly of nux vomica, added to astringents, also of copaiba. This I have not found of any good, nor arsenic, nor the pitch pills and tar, which Simpson lauds, and I perceive that Duhrill² has had a similar experience. Bismuth is sometimes of benefit, but is not to be depended on, nor is turpentine, nor are the alkalies. Opium will for a time prevent the formation of the substance; and of bromide of potassium, Whitehead says that it is the only drug that he can advocate. "But to be of any service it must have a prolonged trial of many months." I have never used it for this length of time, but often to counteract the irritability of the nervous system.

Injections have been highly recommended, and those of nitrate of silver especially. But after all, their use is very limited, for the disease is not generally low enough down to be reached by them. Electricity I have not as yet employed sufficiently to express a decided opinion about it. In Case I. the electro-magnetic battery did no good. Cumming³ has published an enthusiastic account of its wonderful effects, especially when conjoined

¹ London Lancet, Dec. 1859.

² Transactions of the Pathological Society of London, vol. ix.

³ London Medical Gazette, 3d Series, vol. ix.

with the pitch pills. He recommends that the battery be employed for a quarter of an hour daily. From what we have lately heard of the influence of the continuous current on internal disorders, we might expect good results here. But this is a matter I am still investigating.

Of course in the treatment of the vexatious disease under consideration, we must always search for what may be possibly an exciting cause, and seek to remedy it. Otherwise our best endeavours will come to naught, or certainly the difficulties of treating a malady will be immensely heightened, which, in its more advanced forms, will, under any circumstances, tax all our patience and resources to the utmost, and where success, no matter what the skill employed or the perseverance shown, is not always within our reach.

ART. II.—*Fractures of the Odontoid Process.* By STEPHEN SMITH, M.D., Surgeon to Bellevue Hospital, New York.

THE processus dentatus, or odontoid process, is regarded as the body of the atlas attached to the body of the axis. This fact is proved, both in development and in comparative anatomy. In the development of the vertebral column the chorda dorsalis may be traced through the processus dentatus as through the centre of other vertebræ. This proves that the process is the centrum of a vertebra. In the early period of foetal life, therefore, it has the anatomical appearances, relations, and histological elements of a centrum, or body of a vertebra. Comparative anatomy demonstrates the same fact. In fishes there is no odontoid process; the centrum of the atlas retains its normal relations to the other elements, and the ordinary mode of articulation with the body of the second vertebra.¹ As we ascend the scale, this process appears more and more distinctly developed, and always in such relations to the atlas as to prove that it occupies the position of its centrum. In man it appears in its highest state of development, and represents the central portion of the body of the atlas, attached to the superior surface of the body of the axis.

In the development of the odontoid process, we have to notice that it "consists originally of an extension upwards of the cartilaginous mass, in which the lower part of the body (of the axis) is formed. At about the sixth month of foetal life, two osseous nuclei make their appearance in the base of this process; they are placed laterally, and join before birth to form a conical bilobed mass deeply cleft above. The interval between the cleft and the summit of the process is formed by a wedge-shaped piece of cartilage; the base of the process being separated from the body by a car-

¹ Owen, Comp. Anat. and Phys. of Vertebrates, vol. ii. p. 41.

tilaginous interval, which gradually becomes ossified; sometimes by a separate epiphyseal nucleus." (*Gray.*)

The apex has a separate nucleus. (*Humphrey.*) Ossification is not completed until about the fourth year.

This method of development gives great strength to the process. It is so incorporated with the body of the axis that its firm and compact structure is traceable throughout a considerable portion of the body of that bone.

The process is markedly constricted at its base by the transverse ligament. This constriction would seem to diminish very much the strength of the bone, for it is precisely at this point that the greatest strain is brought to bear when violence is applied to the head. But experiments prove that the neck is stronger than the body of the axis.

The odontoid process is maintained in position by the transverse ligament posteriorly, and the anterior ring of the atlas anteriorly. Of these supports, the ring of the atlas is the weakest, and when driven by violence against the process is readily fractured.

The transverse ligament, which has also a crucial arrangement to give greater protection to the spinal cord against possible accidents to the process, has great strength. In the adult subject it will sustain a weight of upwards of two hundred pounds, as will be seen, without yielding. When violence is applied it will frequently tear off its attachments to the axis before its fibres yield.

The moderator, check, or odontoid ligaments attach the upper extremity of the process to the margins of the foramen magnum, and serve as checks upon the movements of the head, not only in rotation, but also in flexion and extension.

Experiments prove not only that the odontoid process has enormous strength, but also that the ligaments which maintain it have remarkable tenacity, and that before their fibres yield, they separate their bony attachments.

The subjoined experiments were made with a view to determine the absolute and relative strength of the odontoid process, its ligaments, etc.

The following experiments illustrate the strength of the odontoid process :—

Expt. 1.—The axis, taken from a recent subject, a well-formed adult male, and separated from all connections with other parts, was suspended firmly. An iron four pound weight, dropped upon its projecting extremity from a height of two feet, did not fracture it. When the weight fell from a height of four feet, the process separated, carrying with it the central portion of the body of the axis. In this case, the process had already sustained a direct weight of two hundred and twenty pounds, suspended from its neck.

Expt. 2.—In a specimen which had resisted upwards of one hundred pounds vigorous and repeated blows with a hammer upon the side of the projecting extremity of the process, the final result was fracture of the laminae of the axis, but the process remained firm and unyielding.

The next experiments were designed to test the comparative strength of the transverse ligament, the anterior ring of the atlas, and the odontoid process, by means of weights suspended so as to place these parts in antagonism :—

Expt. 3.—The two upper cervical vertebrae were removed, and the connections of the atlas and the occiput carefully dissected away. The vertebrae were suspended upon a strong nail passing through the spinal canal so as to sustain the axis, but the atlas was free. A weight was then suspended to the posterior ring of the atlas, amounting, finally, to one hundred and twenty pounds, when the nail broke, but the process remained intact.

Expt. 4.—The axis was now suspended, the atlas being free, except the transverse ligament, and the fastenings firmly attached to both transverse processes of the atlas. A weight suspended from these fastenings was sustained entirely by the transverse ligament and process. Weights to the amount of one hundred and sixty pounds were employed, but failing to break the ligament or process, a man, weighing two hundred and twenty pounds, stepped into a sling attached to the fastenings and remained suspended several minutes before the parts yielded. On examination, it was found that the anterior ring of the atlas had broken, but the process and ligaments were firm, and apparently uninjured.

In order to test the effects of blows which would drive the process forcibly against the anterior ring of the atlas, the experiment was made as follows :—

Expt. 5.—The soft parts of the neck of a well-developed male subject were removed. The body was raised and allowed to fall so as to strike heavily upon the occiput, but no result followed. Direct blows were then given to the anterior face of the ring of the atlas, driving it violently against the process; this resulted in fracturing the ring of the atlas, the process remaining uninjured.

The next experiment was designed to test the comparative strength of the transverse ligament when driven against the process.

Expt. 6.—The soft parts being dissected away, except the ligaments, from the neck of an adult subject, the body was thrown upon the forehead with great violence, but without result. The posterior ring of the atlas was then struck and fractured, but neither the ligament nor process was affected.

On repeating these experiments I made several efforts to fracture the process at its neck by direct violence.

Expt. 7.—In several subjects the axis was fixed, and violent blows given to the anterior and posterior surfaces of the extremity of the process with the inviolable result of fracturing the body of the axis in two places, the central portion remaining attached to the base of the process.

Failing in these several experiments to fracture the process by the application of violence in the manner of the various accidents which are supposed to cause the fracture, it occurred to me that the true explanation of these fractures might possibly be the traction of the strong moderator ligaments upon the extremity of the process in the various violent movements of the head in severe injuries, as blows, falls, &c. The next experiments were undertaken to determine the comparative strength of these ligaments.

Expt. 8.—The base of the skull with the atlas, axis, and two adjacent vertebrae, were taken from the body of a woman apparently forty years of age, and all the attachments between the atlas and occiput and atlas and axis were severed except the check ligaments, the transverse ligaments being also pre-

served. The end of a firm iron rod was passed upwards through the spinal canal to the occiput, but without entering the foramen magnum; the occiput remained firm, and was attached only by the moderator ligaments of the process. A weight of 117 pounds was then suspended from the frontal portion of the base of the skull without any yielding of the parts. This represented a blow upon the occiput.

To test still further the strength of the moderator ligaments compared with the odontoid process, while the preparation was suspended the following additional experiment was made:—

Expt. 9.—While the weight of 117 pounds was still suspended from the frontal portion of the skull, a heavy blow was given to the occiput with a mallet which resulted in a separation of the check ligaments from their attachments to the condyloid processes of the occiput. In this separation the entire bony attachments of the ligaments were removed, the ligaments remaining intact. The odontoid process was uninjured, though the full stress of the blow fell upon its neck, and upon the check ligaments attached to its apex.

Expt. 10.—The same experiment was repeated upon specimens taken from a man between fifty and sixty years of age. A weight of 117 pounds ruptured the moderator ligaments near their attachments to the occiput, at a point where it was found that these ligaments had been wounded in the dissection.

These experiments were repeated on a specimen obtained from a still-born child, well developed.

Expt. 11.—The preparation having been dissected as in the other cases, a weight of $7\frac{3}{4}$ pounds was employed, which, after being sustained for a moment, drew away the odontoid process at its neck. The separation was through the cartilage of the odontoid process at its junction with the body of the axis.

Expt. 12.—The further experiment was repeated of testing the strength of the check ligaments in their attachment to the extremity of the odontoid process, and the condyloid processes of the occiput. A weight of $5\frac{3}{4}$ pounds detached one ligament, with its bony insertion, from the condyle of the occiput.

Expt. 13.—In a preparation taken from a woman aged thirty-five years, the weight was attached to the occiput and the stress was laid upon the check ligaments, the odontoid process, and the transverse ligament. A weight of 111 pounds, after a moment's suspension, dragged away the condyloid attachments of the check ligaments, the bone separating over the entire attachments of the ligaments. This experiment illustrated the effects of a blow upon the forehead.

Expt. 14.—In another preparation, the subject being a woman, 88 pounds were suspended from the transverse processes of the atlas, the stress in this case being upon the anterior ring of the atlas and neck of the odontoid process. This resulted in fracture of the ring of the atlas at the insertion of the transverse ligament.

The following conclusions are established by these experiments:—

1. In a healthy condition of the parts, the odontoid process has greater strength than either the anterior ring of the atlas or the transverse ligament.

2. The odontoid process is less liable to be fractured by external violence than the body of the axis at the insertion of the process.

3. The odontoid process is not fractured by being driven against the transverse ligament, or anterior arch of the atlas.

4. The odontoid ligaments have a combined strength greater than the odontoid process.

The position of the odontoid process in the skeleton is remarkable.

The axis crowns the spinal column, and the process forms its summit. The atlas belongs to the occiput in all its functions, and yet the odontoid process as its body is the centre of all the movements of the atlas and of the head. It is the centre of two forces, viz : 1st, those acting from the head upon the spinal column will detach the process at its base when external violence is applied to the head; and 2d, those acting from the spinal column upon the head. A recent writer¹ remarks :—

“Owing to the skull being articulated at its base, near the middle, on the summit of this portion of the column, imaginary lines drawn from the point of junction to the farthest convexities of the skull along its periphery, will represent levers which will act on the axis of motion in the cervical vertebræ, with power commensurate to their different lengths. If a man falling headlong alights upon the parietal convexity of one side, the portion of skull intervening between that eminence and the occipito-atlantal articulation will be like a lever, which will propagate the force with increased power to the cervical vertebræ.”

The base of the odontoid process then becomes the point on which these levers act, while the severest strain is upon the odontoid ligaments. On whatever part of the head the person falls, the flexion stretches more or less severely the odontoid ligaments, and these acting upon the extremity of the process, the violence is really expended upon its base.

The function of the odontoid process is to maintain the equilibrium of the head in its various movements upon the spinal column. It is placed in the exact centre of the base of the cranium, and in the centre of the bodies of the vertebræ. It maintains the position of the head by means of the odontoid ligaments, and is itself maintained in proper relations with the spine by the transverse ligament, the ring of the atlas, and the action of the muscles. It follows that when this process is broken the equilibrium of the head is lost, or must be maintained by other means, such as the hands, the muscles, and a very careful carriage of the body. From this results one of the most striking and diagnostic symptoms of this fracture.

Fractures of the odontoid process have been regarded as comparatively rare, or at least they have not been very frequently recognized. Considering the position of this bone, and its functions, and the enormous strain that it must necessarily frequently be subjected to when the body is precipitated upon the head, these fractures must be more common than has been supposed. Surgeons of large experience have intimated that they had met with cases not unfrequently in children, who have recovered.

Mr. Henry Earle, in his remarks upon Mr. Phillips' case of fracture of the odontoid process,

“Mentioned some interesting cases of injuries occurring to the cervical vertebræ of children, in some of which he had reason to believe that the odontoid process was fractured or broken off. The little patients were generally scrofulous, and met with the accident in play. It was remarkable, in one instance in

¹ Mr. Shaw, Holmes' Syst. Surg., 2d ed. vol. ii. p. 358.

particular, how tenaciously the child persisted in holding his head fixed between his hands after the occurrence of the injury, nor did he venture to desist from the practice for some days. The cure was attended with complete anchylosis."¹

Manchart has also noticed the fact that dislocation between the first and second cervical vertebræ may occur in children from fracture, or separation of the odontoid process.

It has been supposed that these fractures occur from the sudden impulse of the process against either the anterior ring of the atlas or the transverse ligament. I am satisfied, however, that the efficient agents in this fracture are the odontoid ligaments. The experiments detailed show that the anterior ring of the atlas is comparatively weak, and yields when the process is driven against it with even moderate force. Though the transverse ligament is much stronger, it will nevertheless sever its attachments or yield before the process will break. Again, it is apparent that the process is not driven against these parts, with which it lies in contact, with any such force as to cause a fracture. Neither the ring of the atlas nor transverse ligament is ever found injured, unless there are other extensive injuries.

By far the greatest leverage exerted upon the process is through the medium of the odontoid ligaments. Attached near its apex they pass outwards and upwards to their insertion into the sides of the foramen magnum. In the various movements of the head they maintain its exact position upon the spinal column, and restrain its movement within given limits. If now the head is forcibly driven forwards, or backwards, or laterally, the traction is greatest upon the base of the process, or at its attachments to the axis. If the violence is too great, the process must yield, and a fracture will be the result. This, I am satisfied, is the mechanism of fracture of the odontoid process when the violence is applied externally.

Mr. Shaw remarks (*op. cit.*) :—

"If a man be precipitated from a height, and light upon his head, the impetus of his weight will be conveyed along his spine, and be concentrated at the junction of the column with the base of the skull. Again, the portion of the skull between the point where the head came to the ground and the joint will act with lever power to increase the effect. A violent shock and strain will thus be directed on the atlas and axis. The effects produced vary somewhat. Perhaps the most common is fracture of the processus dentatus at its root, with laceration of the ligamentous connections between the two bones, and dislocation of the atlas forwards. In other cases, the tooth-like process slips from the grasp of the transverse and restraining ligaments, and, freeing the atlas, allows it to slide forwards with the head. Again, the transverse ligament may be ruptured, so as to liberate the processus dentatus, and lead to dislocation. Finally, there may be transverse fracture of the slender arch of the atlas behind the articular processes. In all these injuries but the last, the atlas will have ceased to be restrained by its connection with the odontoid process from sliding horizontally forward on the axis; the weight of the head will, therefore,

¹ Lond. Med. Gaz., Feb. 13, 1836, p. 775.

carry it in that direction, and the cord will be compressed by a to and fro action between the ring of the axis, which is stationary, and that of the atlas, which advances. Its substance will be broken up, and the effect will be instantaneous death, as when an animal is pithed."

Fracture of the odontoid process was long supposed to be a constant result in the execution of criminals by hanging. But there is no satisfactory evidence that fracture occurs under such circumstances. On the contrary, the direction of the force would not be such as to lead to such a fracture. Caspar discards this opinion.

These fractures would seem, however, to have a medico-legal interest. In several criminal trials this injury is stated by Taylor¹ to have been the cause of death, and in a case tried at Glasgow it became a material question how far such a fracture might result from disease.

The following collection of cases illustrate the various circumstances and conditions attending fractures of the odontoid process. They may be variously classified, but the following arrangement presents the most striking features recorded:—

I. SPONTANEOUS FRACTURE.—These fractures occur spontaneously, like similar fractures of other bones, from pre-existing conditions which have impaired the integrity of the process.

The following case, reported by Sir Astley Cooper,² occurred in a person under treatment for syphilis:—

CASE 1.—A woman who was in the venereal ward at St. Thomas's Hospital, and who was then under a mercurial course, while sitting in bed, eating her dinner, was observed to fall suddenly forward, and the patients hastening to her found that she was dead. Upon examination of her body, the dentiform process of the second vertebra had been broken off; the head, in falling forwards, had forced the root of the process back upon the spinal marrow, which occasioned her instant dissolution.

The following case is referred to by Dr. Abercrombie in his *Observations on Diseases of the Spinal Marrow*.³ The person was suffering from disease of the tibia, and, as it proved, had also caries of the odontoid process.

CASE 2.—It [the process] may be affected with caries without producing any urgent symptoms, till it suddenly give way and prove fatal. This occurred in a young man mentioned by Mr. Copeland. He had been using mercury for a disease in the tibia, and had for some time complained of stiffness and pain when he moved his head. In making a sudden turn of his head, he was seized with convulsions and died in a few hours. On dissection, the processus dentatus was found completely detached from the vertebra, having been eroded by caries.

¹ Medical Jurisprudence, 5th Amer. edit., p. 273.

² Treatise on Dislocations and Fractures of the Joints, 7th edit., London, 1831, p. 408.

³ Ed. Med. and Surg. Journ., vol. xiv. p. 42.

An interesting case of spontaneous fracture from pre-existing caries in a person of a scrofulous habit was reported by Dr. A. G. Faywell.¹ The exciting cause was simply a sudden movement of the head backwards.

CASE 3.—A man, æt. 30, scrofulous habit, on May 12th, 1871, suddenly threw his head backward to avoid a ball; felt something give way; swelling occurred at upper and posterior part of neck; had pain in deglutition; on fifth day his head was bent forward, and there was such numbness of the legs as to prevent walking; on sixth day was completely paralyzed, and suddenly died on raising him in bed.

Autopsy.—Odontoid process was fractured at its base and undergoing caries; body of axis carious; internal and external common ligament was destroyed; spinal cord uninjured.

The atlas and axis may become carious, and the disease proceed to that degree that the odontoid process may be entirely destroyed. The following interesting case of this character was reported by Mr. Addison, Surg. :—²

CASE 4.—A young lady, aged twenty, began to complain of slight pains about the neck which were attributed to cold; she began to emaciate; preferred the recumbent position; cervical glands became enlarged; at the end of a year pains in hand and neck more severe; motions of head limited; some pain on pressure of the neck close to the head; recumbent posture now more painful than the erect; if in the latter position, the head was supported on the hand or a pillow; movements of a carriage increased pain of neck; some months later there was tenderness over the atlas upon either side, with increase in size of glands; recumbent position still more painful; only rest night and day was sitting up and supporting the head in the hand; pains now extended to shoulder and head; head constantly rested on the hand or the back of a high chair; patient now, upwards of a year after first attack, felt a severe pain dart suddenly up the back part of the head, and it so increased in violence that she took to her bed; soon after, pricking sensations were felt in the fingers of the right superior extremity, and there was evidently a loss of muscular power in it; pains over left side of head were violent and paroxysmal, and attended with numbness of integuments; pressure upon the transverse process of the atlas on the left side brought on the pains of the left side of the head; breathing regular when awake, but irregular and stertorous when asleep; pain now began to be felt in the right side of the head, and pricking and tingling in left arm and fingers; the right upper extremity had by this time nearly lost all motion; this was followed by loss of motion and sensation in the left arm and hand, and finally complete paraplegia supervened; she experienced a grating in the neck whenever the head was moved; she lay in a totally helpless state for about a fortnight, feces and urine passing involuntarily, when she died; mind unaffected.

Autopsy.—On exposing the cervical vertebrae purulent matter escaped, mixed with gritty portions of bone; the anterior portions of the two superior vertebrae were completely carious, especially on left arch; the right superior oblique process of atlas was carious; ligaments destroyed; pro-

¹ Ed. Med. and Surg. Journ., vol. viii. p. 132.

² Midland Med. and Surg. Reporter, vol. ii. p. 459.

cessus dentatus and all its ligaments destroyed; theca vertebralis infiltrated with pus, but cord appeared normal.

The effects of long-continued pressure of the transverse ligament on the neck of the process have been mentioned as liable to weaken it and predispose to fracture; but as there is a well-formed articulation intervening, it is not probable that this can be regarded as a cause of spontaneous fracture. Nor are there any satisfactory proofs that old age diminishes very materially, or at least to a dangerous degree, the integrity of this bone. The following case of fracture of the axis in such a manner as to include the base of the process, occurring in a man aged 60 years, is the only case I have met with in which old age might be supposed to be the predisposing cause. It was reported by Dr. Copeland.¹

CASE 5.—“A muscular man, aged about sixty years, the father of a late medical friend, when turning in bed, his head being forcibly pressed on the pillow, so as to partially raise the trunk, felt something snap in his neck. He was afterwards unable to bend or rotate the head without causing much pain in the neck; * * he travelled outside a coach, during the summer, to Cornwall, and returned to town, and not till sixteen months after the accident he complained of numbness and want of power in the left arm. In a day or two the palsy extended to both the upper extremities, but was incomplete in the right. It soon became more general, and in a short time, difficulty of breathing, rapidly terminating in asphyxia, supervened. The body was examined by Prof. R. Quain and myself, and the second cervical vertebra was found fractured completely across on both sides; the fracture of one side passing close to the base of the odontoid process. Chronic inflammation had extended from the fracture to the theca and membranes of the medulla oblongata; lymph was thrown out upon the arachnoid surfaces; the membranes, particularly the dura mater, were much thickened, and ultimately the cord at this part was pressed upon.”

Closely allied to the preceding cases, and especially to the last, is separation of the body of the axis from the process. In such cases, though, the odontoid process remains in its position, the separation of its base from the axis is equivalent to a spontaneous fracture, and doubtless would be attended with similar results, were it not that, in the inflammation attendant upon the process of necrosis, ankylosis, more or less complete, of the atlas and axis, precedes the separation. The following case of this kind was reported by Mr. Syme,² as a *Case of Recovery after Extensive Exfoliation of the Vertebra Dentata*, with an engraving which shows that “the entire body of the axis, part of the left superior articulating surface, and half of the left vertebral hole,” separated, leaving the odontoid process in position.

CASE 6.—Mr. G., æt. about thirty-five, had difficulty of swallowing for a year, which finally became distressing; with the finger detected a large tumour filling up the lower part of the pharynx, pressing forwards upon

¹ Diet. Prac. Med., art. Paralysis.

² Ed. Med. and Surg. Journ., vol. xxv. p. 311.

epiglottis, and leaving merely a narrow channel on each side; punctured the abscess with a trocar, and withdrew pus; detected bare bone in the cavity; was so much relieved that he returned to his employment, and continued at work for a month, when he began to suffer excruciating pains in the neck, which compelled him to retain one fixed posture. In the course of three months the necrosed bone separated, and finally escaped into the throat, and was removed by the patient. He rapidly recovered.

On the trial of Robert Reid, for the murder of his wife, at Glasgow, in 1835, Dr. Robertson,¹ one of the witnesses for the prisoner, stated that—

“Within this last fortnight, it has occurred in the medical wards of the Royal Infirmary, that a patient walking in the wards, suddenly dropped down dead, which, he is informed, arose from fracture of the processus dentatus, the fracture being spontaneous, and the patient dead before reaching the floor.”

Taylor, referring to this trial, says it became a material question, how far such a fracture might result from disease. Acquittal took place, partly because the deceased had laboured under disease of the spine, and the exact state of the parts had not been noticed.

Mr. Syme,² in his *Clinical Reports for the Summer Session, 1835*, details a case of death from separation of the odontoid ligaments in the course of caries of the atlas and axis, and in a foot-note alludes to Dr. Robertson's statement, and remarks that the case which he now relates is probably the one referred to by Dr. R., as he knew of no other similar case occurring in the Infirmary.

II. FRACTURES FROM DIRECT VIOLENCE.—The odontoid process may be fractured by direct violence. All the examples of this kind which I have met, have been gun or pistol shot injuries. Death may result from the direct injuries to the spinal cord, the fracture being merely incidental, and of no immediate importance, as in the following case, reported by Mr. Shaw :—³

CASE 7.—In the museum of the Middlesex Hospital there is preserved the axis taken from the body of a gentleman who had been shot in the neck, close to the occiput, while asleep lying on his side. The pistol bullet had entered at the mesial line, between the arches of the atlas and axis, had passed horizontally forward, cut through the spinal cord, and been stopped by the odontoid process, against the back of which it was found sticking, on examination after death. A fissure was also perceived running across the base of the process. A female, with whom he was in bed, had been awakened before the shot was fired, and she stated that, notwithstanding the loudness of the report, the murdered man never stirred a limb, but seemed to continue his sleep undisturbed.

The fatal result in gunshot fractures of the odontoid may be due to displacement of the atlas, as when the fracture occurs from other causes. The following case, reported by Richet,⁴ is an example :—

¹ Medical Jurisprudence, 5th Am. ed., p. 272.

² Ed. Med. and Surg. Journ., vol. xlv. p. 9.

³ Holmes' System of Surgery, vol. ii. p. 395, 2d edit.

⁴ Mal'gaigne, Fractures et Luxations, tome ii. p. 327.

CASE 8.—A man, æt. twenty-two, shot himself in the neck; among other symptoms the articulation between the atlas and axis was noticeably affected; he could turn the head only as he turned his entire body, and was compelled to support the head with his hand. From six to twelve days the head inclined forwards gradually, until finally the chin rested upon the sternum. He was regularly raised up by two assistants to examine the posterior part of the neck. On the seventeenth day they had scarcely raised him to a sitting position when the flexion of the head was suddenly increased, and without a cry or movement he was quite dead. On examination it was found that the ball had fractured the odontoid process at its base; the anterior atlo-axoidean ligament was destroyed, and the articular capsules; the other ligaments were intact.

There may be a partial fracture of the odontoid, or chipping off of its anterior surface, from a gunshot, without immediately dangerous symptoms. The following singular case¹ of gunshot was admitted to Bellevue Hospital:—

CASE 9.—W. M., aged forty years, Swede; seaman; admitted November 8, 1870; attempted to commit suicide by discharging a pistol into his mouth, it being pointed backwards, and a little upwards; was not rendered unconscious, but states that he at once felt severe pain in right side of neck, and noticed loss of power in right arm; a ragged wound is seen on right side of frænum linguæ; has incomplete paralysis of right arm; can raise the elbow only about a foot from the side, and cannot carry the hand to his mouth; power over the flexors is diminished; complains of soreness over right scapula; feels drowsy and dull; on next day had a marked stiffness of neck, rotation being limited. He had an attack of pneumonia, from which he recovered; stiffness of neck and paralysis continued until December 27, when he sat up in bed and drank a cup of coffee; he remained sitting a few minutes, then fell suddenly backward and was dead.

Autopsy.—The ball had passed backwards carrying away a portion of the left side of the anterior ring of the atlas, and lodged on the anterior surface of the summit of the odontoid process, a little to the left of the median line, being flattened over the process so as to stride it; the anterior part of the superior articular surface, involving the base of the process, had been carried away by the ball; there was caries of the bone where injured, and of the left superior articular surface of the atlas; cord softened opposite the injured bones, but no displacement, nor other apparent injury of odontoid or transverse ligaments.

Mr. Alcock,² in his *Observations on Complicated Surgical Injuries*, reports a case, "showing the occasional absence of all urgent symptoms in a fracture of the body of the second cervical vertebra," with illustrations. This was a gunshot injury of the body of the second vertebra in which the odontoid process seems to have been as completely deprived of support as when fractured; and is not unlike the cases of fracture of the body of the axis at the base of the process:—

¹ Notes by Dr. St. John, House Surgeon.

² Lond. Med. Gaz., July 30, 1839, p. 584.

CASE 10.—W. B. was struck in the mouth by a musket-ball, May 28, 1836, breaking two incisor teeth, and the patient supposed that he spit it out; on the fifteenth day he was discharged to duty at his own request; admitted again in thirty-eight days, with great difficulty of swallowing; stiffness of back of neck; inability to protrude the tongue; slight obstruction to respiration; pain up the side of his head and neck; sank rapidly, and died on twenty-fifth day after re-admission.

Autopsy.—Ball had destroyed the body of the axis, leaving many fragments in the cavity, exposing the theca vertebralis; no injury to the cord.

III. FRACTURES FROM EXTERNAL VIOLENCE.—External violence may be applied in several directions to the head or neck, and produce fracture of the odontoid process.

(a.) *Violence applied to Forehead.*—In the following case the force of the violence was received upon the forehead, and though fracture occurred, the patient suffered so slightly as to resume an active and laborious business, and prosecute it for several months. It will be noticed that the subject of the accident had previously been accustomed to take mercurials and iodide of potassium, and it is possible there was an unusual fragility of his bones. The case occurred in the practice of Dr. Bigelow, of this city, and was reported by Prof. Parker.¹

CASE 11.—A milkman, forty years of age, of active business habits, addicted to the free use of liquors, suffered from occasional attacks of rheumatism, for which he was accustomed to take mercurials, followed by liberal doses of iodide of potassium. On August 12, 1852, he was thrown violently from his carriage upon his head and face; he arose, and complained only of faintness, rode home two miles; next day had swelling of neck, pain in back part of head, inability to rotate the head; no paralysis. On fifth day an irregularity was detected in the region of the atlas and axis; began to walk around, supporting the head with one hand applied to the occiput, but had pain in this region. The deformity now consisted of a prominence just below the base of the occiput, to the left of the central line of the spine, with a corresponding indentation. On the ninth day he rode out, and then resumed his former duties of distributing milk to his old customers. During the next four months he continued actively at work, but complained much of pain in his head. About January 1, 1853, the pains became more severe, and he heard a snapping in his neck. January 11, after his day's work, he complained of feeling cold, and of numbness of his limbs; on the following day had numbness of his sides; dragged his feet when he walked; died instantly, while sitting in a chair, five months after receipt of injury.

Autopsy.—Odontoid process fractured and inclining backwards towards the cord; blood was found effused between the fractured surfaces; the ligaments of the process were normal, but the occipito-axoid ligament was partially destroyed; spinal cord was healthy.

Hammick (*Pract. Remarks on Amput., Fract., &c.*, p. 183) remarks: "A fracture of the dentatal process is a rare accident; but when it happens, it is usually not from a blow at the back part of the neck, but

¹ New York Journal of Medicine, vol. x., N. S., p. 164.

from one in front, striking the head back." Numerous cases prove the fallacy of this opinion.

(b.) *Fracture from Violence applied to the Back Part of the Neck.*—The following is reported by Costes.¹

CASE 12.—A boy, aged fifteen, was thrown to the ground, and received blows upon the back of the neck; from that moment the movements of the neck were embarrassed, and the head was inclined forwards. Four months later he was suddenly seized with pain in his right arm and leg. Eight days after he lost the entire use of his extremities, and entered hospital. There was a hard swelling on the back of the neck, projecting a little to the right side; several applications of leeches relieved his pain, and he recovered slight power over the arm; the chin inclined to the left side, and was depressed nearly to the thorax. He died four months and a half after the accident.

Autopsy.—The atlas was luxated forward, the right condyle being much in advance of the left. The right articular facet had completely left that of the axis. The left facet still covered the anterior half of that of the axis. The atlas had become displaced forward and downward, at an angle with the spinal column, and its right articular facet corresponded with the right *fossæ* of the anterior surface of the axis; fibrous tissue and cartilage of incrustation was here found, proving that the luxation was of long standing. The odontoid process was fractured off at its base and carried forward with the atlas, and lay in a nearly horizontal position; it was united by bone to the axis. The posterior arch of the atlas had approached the body of the axis so as to leave a transverse fissure two lines on the left and four-fifths of a line on the right.

The following case was reported by B. Phillips,² and was regarded at the time as being remarkable for the length of time which the patient survived the accident.

CASE 13.—A man fell from a hay-rick striking upon back of head, "stunned," but on third day resumed work, having a stiffness of neck; the stiffness of neck continued, with inability to rotate the head; at the end of three weeks a small tumour was apparent over the second cervical vertebra; a tumour appeared in the pharynx in the region of the body of the axis; subsequently had pleurisy, and at the end of nine months general dropsy appeared, and he died forty-seven weeks from the injury with hydrothorax; had no symptoms of paralysis of motion or sensation.

Autopsy.—Fracture of atlas behind articular surfaces, and of odontoid process of axis; dislocation of atlas forward upon axis in an oblique direction, downwards and forwards; atlas resting upon same plane as axis, to the body and transverse processes of which it became attached by perfect bony union while the posterior fragment had suffered no displacement; there were two spinal and four transverse foramina.

(c.) *Fracture from Violence applied to the Side of the Head.*—Fracture may occur when the injury is received upon the lateral portions of the head. Mr. Spangenberg³ reported the following case:—

¹ Malgaigne, *Fractures et Luxations*, tome ii. p. 329.

² *Med.-Chir. Transact.*, vol. xx. p. 78.

³ *All. Rep.* Jan. 1864, *Ed. Med. and Surg. Journ.*, vol. lxiv. p. 527.

CASE 14.—A man, aged twenty-eight, fell from a horse upon the side of the head, July 8, 1839; rode half a league when he heard something give way and he fell insensible to the ground. On examination a small swelling was found over the left parietal bone, an enlargement at the upper part of the nape of the neck over the atlas in which was a movable tumour having the form of the spinous process of the seventh cervical vertebra; pressure on this tumour or an attempt at rotation of the head caused acute pain, and a crepitating sound was heard; the head hung forward with the chin on the sternum; no symptoms of injury of spinal cord; recovered so as to be able to walk about, having the head supported in an apparatus; subsequently inflammation occurred, abscesses formed, and he died worn out by hectic, but without any affection of the spinal cord, in October, 1841.

Autopsy.—Posterior arch of atlas was fractured near its articular process; it was carious and absorbed to a considerable extent; body and transverse processes of axis presented the same kind of degeneration; odontoid process was fractured and its ligaments in part destroyed; spinal cord uninjured.

But it is not necessary that the violence should be applied to the head to cause this fracture. It may occur when the injury is received upon the back of the neck. Violence applied over the axis posteriorly is the equivalent of violence applied to the forehead, and is followed by the same results, as appears from the following case occurring in Bellevue Hospital.¹

(d.) *Fracture from Violence applied to Back of Neck.*—

CASE 15.—A man, æt. forty-nine, was admitted to Bellevue Hospital Oct. 12, 1868; he was intemperate; had suffered from primary syphilis; was at this time complaining of pains in the right thigh, knee, and hip. He had also a hard immovable tumour over the upper cervical vertebrae of the size of an English walnut, which he stated was the result of a blow received upon the part a few months previously. Several days after admission he began to complain of pain in the neck and sleeplessness; the pain was aggravated by motion. On the 28th of October, he was found to be partially paralyzed—he could not move his right arm at all, but could stir his fingers, but without sensation. The left hand and arm were less paralyzed. Both legs and feet were similarly affected. There was marked diminution of sensibility over the entire surface below the neck. There were no cerebral symptoms; pupils normal. He stated that the paralysis came on suddenly after sitting up in bed a few moments, and that he had the same symptoms the evening before, after his neck was rubbed with liniment. On the following day the paraplegia was more marked, but no other symptoms present; mind clear; passed water and feces voluntarily; respiration normal. Died suddenly at 11.30 P. M.

Autopsy.—On examination it was found that the first cervical vertebra was dislocated forward, and the odontoid process broken off, and carried with the atlas; there was an old ecchymosis at the seat of fracture; cord and its meninges apparently natural.

The preceding cases illustrate the various predisposing and exciting causes of fracture of the odontoid process. Other features connected with these fractures are as follows:—

¹ Notes by Dr. W. H. Kaizenbach.

IV. FRACTURES OF THE ODONTOID PROCESS MAY AT FIRST HAVE SLIGHT SYMPTOMS.—Fracture of the odontoid process may occur, and yet produce so little effect that a person, recovering from the shock of the injury, may resume his occupation as a labourer, and continue for a considerable time before the dislocation creates any ill effects. The dislocation may then occur suddenly, and produce immediate death, as in Case 11, or it may proceed gradually, and produce paraplegia and death. The following case, admitted to Bellevue Hospital, illustrates the latter result.

CASE 16.—A labourer was admitted to Bellevue Hospital with the following history: Three months previously he had fallen from a building and received a blow upon the head, which he thought sprained his neck. He continued his work for about six weeks; at first he suffered no inconvenience, but finally a swelling appeared upon the upper part of the back of the neck, which was very painful. He soon after noticed that his left arm was growing weak, with inability to raise it freely; the right arm also began to be impaired in its motions; the lower extremities were not affected at this time. During the following three weeks the deformity of the neck increased rapidly, the head became fixed with the chin carried to the left side and upward, and the occiput to the right side and downward. The paralysis of the left arm became complete as regards its movements, and that of the right was much impaired; the patient also lost all power over the left leg; sensation, though not lost, was impaired in the upper and lower extremities. He had nearly constant headache; his face expressed great distress; the left arm became œdematous, purple, and cold; the face also became purple, and the skin generally showed by its dusky hue imperfect aeration of the blood. He had severe attacks of dyspnoea, followed by thoracic respiration; involuntary action of bowels and bladder; great emaciation. His position in bed was peculiar, being recumbent, with the head fixed, the chin thrown upwards and to the left side; eyes protruding; facial expression that of great suffering. He seemed at times to recover slightly the sensibility of his extremities, and a very slight power of motion. His mind remained undisturbed; he died 160 days after the injury.

Autopsy.—Body emaciated; hands and feet œdematous; brain and membranes normal; the odontoid process was fractured and carried forward so as to lie in a nearly horizontal position in contact with the anterior ring of the atlas; the atlas was dislocated forwards and slightly to the left side; the articular facets resting anterior to the body of the axis; the spinal canal was diminished to three-eighths of an inch; there was no rupture of ligaments, or other fracture.

Palleta¹ reports the following case:—

CASE 17.—A robust porter, in the prime of life, fell under a weight which he was unable to sustain upon his shoulders. He arose, and passed a month without consulting any one, but finally was taken to the hospital. The head was inclined forward, but especially to the left; at the upper part of the neck was a considerable depression; no symptoms of paralysis; the head could be easily raised to its natural position, but when unsupported fell upon the left shoulder. On the sixth day after admission, the patient

¹ Malgaigne, *Fractures et Luxations*, tome ii. p. 327.

was seized with violent convulsions and suddenly died. It was found that the odontoid process was fractured at its base. Ligaments sound, and no displacement mentioned.

V. MULTIPLE FRACTURES.—Fractures of the odontoid process are frequently associated with fractures of the atlas or axis, or of both vertebræ. These cases are rarely immediately fatal. The following is an example of fracture of the process with fracture of the atlas:—

CASE 18.—A man fell down stairs; had loss of motion of the limbs except the left lower extremity; sensibility of right side morbidly acute; that of the left destroyed except on the abdomen; second day had pain in right arm; skin of left side less sensible; third day morbid sensibility of right side less, and sensation of left returning; thinks his arms lie across his chest; fifth day had slight motion of left arm, and power of moving right leg increased; death on fifth day.

Autopsy.—Atlas broken in two places; line of fracture diagonal, and through left vertebral foramen; pivot of axis broken off and a small piece of body also; fifth vertebra fractured through the body; no pressure on the cord at site of either fracture; cord broken down and disorganized opposite fifth vertebra.¹

Although fracture of the odontoid process has been generally regarded as necessarily fatal, yet recovery is possible in at least two ways. Neither of those methods, however, has been proved to be by union of the fractured bone. It is doubtless true that this isolated bone, fractured at its base, may unite; for in several of the pathological specimens such union seems to have taken place. But irreparable damage had already been done, and the union was not of a kind to save the patient from the fatal results.

VI. FRACTURE OF THE ODONTOID PROCESS FOLLOWED BY THE ESCAPE OF THE PROCESS, AND RECOVERY.—The following well-authenticated case of fracture of the odontoid process, with recovery, after the escape of the process, was reported by Dr. Bayard.²

CASE 19.—Girl aged six years, fell five feet, striking on head and neck; was unable to move her head without pain, and carefully supported her chin with her hand when she walked; head inclined forward and to the right side, and any attempt to rotate it caused great pain; no swelling or irregularity of neck. Two months after had convulsive movements of arms and legs, and inability to support her head, followed by paralysis of body below the neck; continued in this condition for three months, after which she gradually recovered power of walking. Nine months after accident could walk well, but supported her chin in her hand; head rested upon right shoulder, and could not be raised without severe pain; an irregularity of neck gave appearance of luxation of axis and atlas; wore an apparatus which raised the head, and she recovered power of rotation; a depression was seen behind right sterno-mastoid, and a corresponding ele-

¹ South's Chelius, vol. i. p. 585.

² Canada Med. Journ., Dec. 1869.

vation on the opposite side. About two years and a half after the accident, a post-pharyngeal abscess formed from which a bone escaped which was decided to be the odontoid process, abscess closed, and patient recovered.

Mr. Hilton¹ quotes the following case from Guy's Museum book, with an illustration, which represents a portion of the odontoid process removed.

CASE 20.—Mrs. G., a patient of Mr. Babbington, in 1834, a married woman, who had worked hard at washing, and been much exposed to cold. Five years before she had an attack of plenrisy, but was not aware of having taken mercury, at least not to salivation, and she never had syphilis. Four months previously to her seeking advice, she began to find her neck stiff, with a pain at the back of her head. These symptoms increased until one day, on coughing, she brought from her mouth a piece of bone, and subsequently some smaller fragments—and a portion of the atlas or first vertebra seen in the specimen. She was visited for some months afterwards, when the head was nearly fixed, and there was a discharging ulcer at the back of the pharynx. The patient was last seen in October, 1838, when she was in tolerable health, and serving at the bar of a public house.

VII. FRACTURE OF THE ODONTOID PROCESS AND RECOVERY, WITH THE FORMATION OF A FALSE JOINT.—Mr. Curling² reports the following case of fracture of the odontoid process, and the *formation* of a false joint.

CASE 21.—A robust man, aged forty-two, walked into the hospital, May 17, 1838, having just fallen a few feet from a ladder upon the back part of his head and neck. There was no mark of external injury, but he complained of slight pain in the head, and stated that, since the accident, he had been deaf; he appeared stupid, answering questions reluctantly; pulse slow; pupils acted freely. Second day he appeared somewhat better, but complained of pain in the back of the neck; became delirious during following night. On the third day was unconscious; pupils contracted. On the fourth day became sensible; then insensible, with stertorous breathing. On being bled he became again sensible, but soon after suddenly expired.

Autopsy.—Brain congested; more fluid than usual in the cavity of the arachnoid and lateral ventricles. The foramen magnum was smaller than usual, and the odontoid process was discovered to be movable. On dissection the process was found to be connected as usual to the occipital bone by the perpendicular and moderator ligaments, but was attached to the second vertebra by means of two slender ligaments, which passed from it to their insertion near the superior articulating processes of the latter. The transverse ligaments, larger than usual, flattened horizontally and polished above and below, formed a distinct inter-articular ligament between the odontoid process and the body of the second vertebra. There was a communication between the two articulations in front, where there was also a slight spinous projection of the processus dentatus. Behind this projection the surface of bone which rested on the transverse ligament was flattened, and tipped with thin cartilage. The corresponding part of the second vertebra likewise presented a distinct articular surface. At

¹ Lecture on Rest and Pain, p. 104, London, 1863.

² London Hospital Reports, vol. i. p. 142.

this spot the theca vertebralis was much thickened, closely adherent, and contained a small cyst filled with an inspissated fluid, like that found generally in ganglions. The superior articulating processes of the second vertebra, and the corresponding surfaces of the first, were remarkably large. There was no appearance of injury or disease about the spinal cord or the ligaments of the vertebra.

Mr. Curling concluded that this state of things had existed for a long period, as there was no evidence of recent injury; the false joint was covered with cartilage; a bursa had been developed; a large surface had been formed upon the second vertebra for the play of the process. He regarded these appearances as the result either of an original malformation, or of accidental violence before the third year. Death was not due to this condition of the process.

An analogous case was presented to the London Pathological Society, December 1, 1857, by Mr. Shaw.¹ It was found in a dissecting-room subject, and was therefore without a history.

CASE 22.—The specimen consisted of the occipital portion of a skull, with the atlas adhering to it by ankylosis, and the axis, having its odontoid process detached, as a distinct bone. The odontoid process was of its normal size and figure; it was separated at its base, on the under surface of which, as well as on the upper surface of the body of the axis, were the appearances of an articulation by a false joint having existed during life.

Mr. Shaw was of the opinion that the separation of the process was not the result of violence, but that it had been caused by disease occurring in early life, when the process was still an epiphysis. That view was supported by the evidences of disease having existed at one time in the joints of the occiput and atlas. These two bones were ankylosed, and the union was so intimate that it amounted to complete fusion of the articular surfaces; there was also slight distortion, the atlas, in the process of union, having been projected somewhat forwards, and turned round at the same time on its centre, so that the right side was more advanced than the left; in this way a perceptible encroachment on the canal for containing the spinal marrow had been produced. The morbid appearances denoted that the disease thus affecting parts in close proximity to the odontoid process had prevailed at a distant period, probably when the individual was young. It is not till about the fourth year that that process ceases to be an epiphysis, and is joined to the body of the axis by bony union. Accordingly it is reasonable to conclude, that if the disease had been active at that period, the process of ossific union would have been interrupted; and we can readily understand that afterwards the junction would take place by the formation of a false joint.

However these two cases of false joint are to be explained, the following remarkable example, also discovered accidentally in a dissecting-room sub-

¹ Transactions Lond. Path. Soc., vol. xv.

ject, would seem to admit of explanation only on the supposition of a previous fracture. It was reported by Dr. A. Friedlowsky :—¹

CASE 23.—*Apparent Fracture of the Odontoid Process.*—Subject, an adult; atlas was normal in its articulations with the condyles of the occiput above, and with the axis below; the anterior tubercle was enlarged; upon the posterior surface of the anterior arch the articular surface of the odontoid process was well marked, but instead of being round or oval, as usual, it was triangular, with a rounded base above, and a point below, and irregular sides. On examining the anterior half of the atlas from below, a new articulating surface was discovered; it extended from the anterior border of the arch of the atlas, obliquely backwards and upwards, and was deepened in the middle into an oblique oval-shaped channel. The prominence of the anterior margin of this articulating fossa, which had several projecting bony processes, gave the peculiar enlargement of the anterior tubercle. The diameter of this new-formed articulation was upwards of six lines broad, and four lines antero-posteriorly. The lateral processes, the foramina, and the posterior arch of the atlas were normal. The axis was entirely normal except its odontoid process. This was short, and had apparently dwindled down to a roundish knob. Its upper portion, which normally has a smooth surface anteriorly and posteriorly for the arch of the atlas and transverse ligament, presented only a blunt point, smoothed in front and behind more than at the sides, and had a waxy lustre noticeable in the new-formed articulation. On placing the atlas and axis in proper relations with each other, it was found that the knob-like extremity of the odontoid process fitted into the new-formed articulation on the under surface of the anterior arch of the atlas; and in the movements of the head from right to left, the atlas moved upon the extremity of the process which passed along the oblique groove mentioned.

Dr. F. regarded these conditions as acquired, and the result of fracture of the odontoid process from external violence, because the articular surface of the odontoid process was found well marked on the posterior surface of the arch of the atlas, and there were no evidences of necrosis. The upper portion of the process was not found, but that did not invalidate his conclusion. The anomalous displacement of the odontoid process forwards and downwards he attributed to certain deep muscles of the neck, especially the innermost fibres of the longus colli.

As regards the date of the fracture, he fixed it at an early period; as the process is developed from two points of ossification, which gradually form a union with each other, and with the corresponding point of ossification of the axis, the neck, head, and point of the process remain for some time cartilaginous; such condition would favour a fracture at this period.

On reviewing the preceding cases the following general conclusions are deducible:—

Mode of Death.—The mode of death varies very much in fractures of the odontoid process:—

¹ Medizinischer Jahrbucher, xv. Band. p. 233.

1. It may be instantaneous from pressure of the broken process upon the medulla oblongata. In these cases the victim is literally pithed.

2. Pressure of the process may be gradual. In such cases the pressure may be upon the anterior columns of the cord, when paralysis of motion of the extremities is first experienced—generally in one hand first, then in the foot of the corresponding side, and finally complete paraplegia of all the parts below the middle of the neck occurs, and death follows from exhaustion.

3. Displacement of the atlas upon the axis may suddenly occur, and death follow from compression of the cord.

4. Displacement of the atlas may be very gradual. In these cases, and they are quite numerous, the patients have maintained the head in its position for a considerable period without any marked symptoms; whenever they have continued to move about, grave symptoms have finally supervened from a gradual luxation of the atlas upon the axis. It is surprising to what an extent the spinal canal may be encroached upon, and the functions of the cord may be more or less preserved. In one case, it was three-eighths, and in a second one-fourth of an inch in diameter.

Symptoms.—If the function of the odontoid process is to poise the head upon the spinal column, we should naturally anticipate that the most important and constant symptoms of fracture would be those which show that this support is lost. And such is the case. Patients carry the head as if steadying a weight upon it, unsupported. In all their movements, the centre of gravity of the head is carefully maintained in its proper relations to the apex of the spinal column. The foramen magnum being a little posterior to the centre of the base of the skull, patients generally elevate the chin, in order to preserve the centre of gravity. Whenever they wish to elevate the eyes above the ordinary level, they support the occiput in the hand, and in looking downward they support the chin in the hand. If the relations of the head to the spine are disturbed by a shock, they seize the head upon the sides with both hands, and hold it firmly for a time. On attempting to rise from bed they elevate the head with the hand applied to the occiput, and in bed move the head cautiously with the hands.

Other symptoms are especially related to the complications which may exist.

External appearances are not characteristic, and are indicative of changes in the position of the atlas or axis.

Whenever the fracture occurs from chronic diseases of the articulations, as in Cases 4 and 6, we have superadded, difficulty of swallowing, excessive pain of head and neck due to pressure upon the first cervical nerves, inability to rotate the head, and finally, all the symptoms of separation of the process or the odontoid ligaments.

Prof. Rust, who recorded thirteen cases of disease of the articulation of atlas and axis, has given a very perfect description of the symptoms which

are present when the odontoid process yields or its ligaments are destroyed. There can be no doubt that in his cases this fracture actually existed, or the odontoid ligaments had separated, for they are the counterpart of the cases alluded to.

"After a certain length of time, the pain becomes more violent when the head is inclined to one side; * * * difficulty of swallowing and respiration continues to increase, and the pain, which is concentrated about the occiput, becomes almost insupportable on the least motion of the head. The head now falls on one shoulder, and usually on the right one, because the disease most frequently affects the left side of the vertebræ. * * * The pain in swallowing, speaking, and breathing recurs: the head becomes inclined a little backward, or to the side opposite its former position. The patient cannot obtain ease in any position; and he can neither rise nor lie down without supporting his head with both hands."

A portrait of a person suffering from this disease is given by Prof. Rust, which strikingly resembles the appearance of the patient with fracture of the odontoid process (Case 16) who came under my own care.

The reviewer says:—

"We hardly ever witnessed so distressing a representation of the human visage; the fixed teeth, curled lips, obliquity of the eyes, contracted brow, rugous forehead, erect hair, and the sharp lines formed by the muscles in consequence of the state of emaciation."

Prognosis.—Although most of the cases reported were fatal, a review of these records shows that the prognosis in fractures of the odontoid, if not attended with immediate displacement of the atlas, is very favourable. Cases which have been recognized and properly treated, have recovered. In other instances, not recognized, the patients have lived for considerable periods, the fatal changes taking place very gradually. These changes were such as could at any time have been arrested by proper appliances.

Still other cases of recovery are recorded in which the process separated and was discharged. Ankylosis of the axis and atlas generally follows recovery.

Treatment.—The treatment, as in all fractures, must be absolute rest to the fractured bone. This can best be secured by an apparatus, which not only fixes the head in its central position, but which supports the upper cervical vertebræ firmly in their proper relations to the head, and to each other. Mr. Hilton² beautifully illustrates this latter point in a case of supposed fracture of the odontoid process in which, when support was removed from upper part of the back of the neck, a sense of suffocation followed, threatening immediate death. The patient may be placed in a recumbent position, with sand-bags by the side of the head, and a fold of cloth under the neck, or a splint may be applied to the back and head, as was practised by Dr. Bayard, with success. The latter is preferable, as it allows the patient to move about.

¹ Review of his work on Arthrocacology, London Med. and Phys. Journ., vol. xli. p. 342.

² Lectures on Rest and Pain, op. cit.

ART. III.—*On the Therapeutic Value of Nitrite of Amyl.* By H. C. WOOD, Jr., M.D., Physician to the Philadelphia Hospital.

It will be remembered that the conclusions arrived at in my paper upon the nitrite of amyl, which was published in the last number of this Journal, were, that in its action on animals it is an almost universal sedative, impairing the power of muscular fibre to contract, and the nerve to carry the motor impulse; lessening the reflex excitability of the spine, &c., and acting similarly, though much more feebly, on the centres of sensation and consciousness. As regards the circulation, its uniform action was to lessen arterial blood-pressure, although at first this diminution of force in the circulation is associated, at least in the dog, with a wildly excited action of the heart, without loss, and possibly even with gain, of power in the individual heart beat; in a little while, however, the heart itself manifests very plainly the sedative influence. It was further shown that the nitrite of amyl catalytically arrests oxidation.

These views are apparently not in accordance with the theories of some previous writers, that the nitrite acts upon man as a powerful stimulant. The systems chiefly affected, *i.e.*, motor and circulatory, are so consonant in their functions throughout the higher vertebrates, as to render it inconceivable that a drug which acted as a uniform depressant upon the lower animal should be a stimulant to man. Fortunately there have not been as yet any cases of human poisoning by the drug, and no one in experimenting upon man, that I know of, has as yet carried the effect far enough to produce serious spinal symptoms. Strychnia, woorara, calabar bean, &c. affect the motor apparatus of man as they do that of the dog; and there is no reason for believing that the nitrite of amyl differs from them in this respect. In a case of Dr. Da Costa's, the remedy, which he had used with good effect, was administered too freely during his absence from the city, by another physician, and produced alarming general prostration; the evidence, as far as it goes, therefore favours the view so strongly commended by *a priori* reasoning.

The most prominent symptoms induced when the nitrite of amyl is inhaled by a man in moderate quantities, are a sense of great fulness and distension of the head, amounting at last to severe pain, and accompanied by intense flushing of the face, a deep, laboured respiration, and an exceedingly rapid, violent action of the heart.

It is these latter symptoms which have been looked upon as demonstrating that nitrite of amyl is a direct vascular stimulant. I think, however, they have a different significance. The sensations in the head, and flushing of the face, are evidently explainable as being the results of the dilatation of the capillaries. The excited, violently laboured action of the heart is no indication of increased arterial blood pressure, since it is pre-

cisely what is seen in the dog, under similar circumstances, associated with lessened arterial pressure. If the windpipe of a man or animal be suddenly compressed, the same violent respiratory efforts, and the same wild tumultuous action of the heart result, and I believe from the same cause. When the nitrite is taken into the lungs, it instantly arrests or diminishes oxidation, and a thrill of impending suffocation runs through the system in obedience to which the respiratory and circulatory organs gather up and exert to the utmost their forces. The central impulse sent to the cardiac and respiratory muscles, is at first much more than sufficient to overcome any direct action of the nitrite upon them, but the inhalation being persisted in, the impulse is constantly growing weaker, and the direct influence of the drug stronger, so that there soon comes a time, when the reverse is true, and the heart's power is more or less nearly extinguished. Any one reading the account of the experiments previously given, can note this as true in regard to the dog, and some who have administered the remedy to man with a little too great boldness, have been sorely frightened and puzzled by the same phenomenon. This loss of power comes on too quickly, is too great and progressive, and is too clearly connected with the presence of a certain amount of the nitrite in the system, to be explained as a mere secondary depression from over stimulation. Those who have watched the steady whirr of the heart in a case of atropia poisoning, know how it often takes hours of intense action to exhaust the viscus. Nor is the loss of heart-power at all comparable to the deadly paralysis sometimes produced by chloroform. It comes on gradually, rapidly to be sure, but still by degrees, and not abruptly, and as before hinted at, is always proportional to the dose. For these reasons, I do not see how the phenomenon can be explained otherwise than above, and believe it fairly demonstrated that nitrite of amyl acts upon man precisely as upon the lower animals. A recent writer in the *London Practitioner* deems the fact that the nitrite relieves the paroxysms of angina pectoris sufficient to prove that it is a stimulant. The truth is, we have no positive knowledge of the real nature of the disease alluded to. How futile then to attempt to explain the physiological action of a medicine by its effect upon it. This attempting to study physiologically a not understood medicine by its influence upon a not understood pathological condition, is unfortunately not new in medical annals; to complete its absurdity is only needed the common practice of explaining also the disease by the influence of the medicine upon it. Surely, this reading the unknown by the unknown resembles the youthful gambols of a kitten in pursuit of its tail—a circle of useless labour.

The question now arises of what practical value is the nitrite of amyl? Its peculiar physiological power of checking oxidation and lowering temperature suggests its use in fevers, when it is desirable to lessen the rapidity of the tissue changes. Its action upon the nervous and circula-

tory systems would, however, very possibly, do more harm in a low fever than its other powers would do good. I have, however, no clinical evidence to offer, and therefore the matter must be left as a simple suggestion. There is one disease in which theoretically it ought to be of great value, *i.e.* tetanus. There is scarcely any doubt but that there exists in that affection a condition of exalted functional activity of the reflex motor centres, and of these centres the nitrite is a powerful depressant. Moreover, in many cases of tetanus, there is an enormous rise in the activity of oxidation and consequently of temperature of the body, so that the nitrite would meet a second indication. Clinical evidence also is not altogether wanting, and although not enough to warrant any conclusion, is sufficient to encourage further trials.

Two cases of recovery from tetanus are reported in the *Lancet* of the present year (vol. i. p. 572), one of which was treated by nitrite of amyl alone, the other by it and chloral. I am under the impression that another successful case has been reported, but cannot refer to it.

There is one fearfully painful affection, namely, angina pectoris, in which a considerable amount of clinical evidence shows the nitrite of amyl to be of very great value. Quite a number of cases have been reported, in which the inhalation has been of very great service in affording rapid and permanent relief. Nor are these cases limited to true angina pectoris, in which there is no evident organic cardiac disease; on the contrary, many of the patients have been sufferers from very well marked valvular disease. Among the cases reported the following may be cited, the reporter's name and journal being alone given: Brunton, *London Lancet*, 1869, and *Medical Times and Gazette*, 1870; Leishmann, *Glasgow Medical Journal*, August, 1869; Haddon, *Edinburgh Medical Journal*, 1870; Anstie, Thompson, *Medical Times and Gazette*, 1870; also, *Clinical Society's Transactions*, vol. iii.

I have had an opportunity of using the nitrite in one case of severe suffering connected with valvular disease, and the effect in relieving the heart pang after the failure of other remedies was astonishing. The following *résumé* of the case is offered:—

H. D., coloured; female; æt. 21; sick in Philadelphia Hospital with chronic pneumonia and heart symptoms believed to depend upon chronic mitral disease. There was slight increase of cardiac dullness, with a soft, but loud systolic murmur, loudest at the apex, but audible at the base, and very distinct between the shoulders.

Feb. 20. Commenced to suffer with paroxysms of severe pain in the region of the heart, with suffocative feeling; chiefly complained of a gripping sensation, as if some one was holding and choking her in the cardiac region. She stated that she was in agony, and appeared to suffer violent pain. Various remedies were used without decided relief; I copy now from my note-book.

March 2. Suffered from anginose attack last night; during a "spell" this morning was allowed to inhale nitrite of amyl very cautiously, with apparently marked relief and shortening of paroxysm. 3 P.M. Found by Dr.

McCoy, resident physician, suffering from a severe spell. He reports: "Her pulse was 34 in a quarter of a minute. Five gtt. of the nitrite were placed upon a handkerchief and held over her nostrils. In second quarter of a minute pulse rose to 40; third quarter, 39, and Dr. Bullard, of Brooklyn, who was present, said 'weaker.' In a minute she appeared easy, reclining on a pillow (during paroxysm she always sat up bent forward), and soon after she said her pain was gone."

3d. Had a very severe spell, during which she was seen by Dr. Murray (resident physician), who reports: "Found her suffering great agony; gave by inhalation 5 gtt. of the nitrite of amyl; pulse 37 in the quarter of a minute preceding inhalation; same for the three-quarters after giving the medicine; she appeared easy in half a minute; could not answer questions as to how she was for a minute after; heart agony instantly stopped."

6th. Had a paroxysm during my visit; pulse 110; five gtt. of the nitrite on a handkerchief held at a little distance from her nostrils; 1 minute, says she is somewhat relieved; pulse 110; 2 minutes, 5 gtt. more put on handkerchief and held close to nose; 3 minutes, says she is completely relieved.

15th. Has had several spells since last entry, all of them at once controlled by the nitrite. They have been gradually occurring at longer intervals, and have now apparently ceased.

20th. Had no more spells.

In regard to the method of administration, I am not aware that the nitrite has been given otherwise than by inhalation. Its totally insoluble and highly volatile nature renders it unfit for exhibition either in solution or mixture; but I do not see why it could not be given dropped upon a piece of sugar. In cases of tetanus it seems plausible that the remedy would be more efficient if given by the stomach in frequent small doses. When it is to be inhaled, five drops should be placed upon a handkerchief and held close to the nostrils, the pulse being closely watched and taken as a guide for the continuance or withdrawal of the drug. If necessary the dose should be repeated. When giving it by the stomach I do not think it would be safe to start with more than two drops until the effects of the medicine so administered have been more studied than at present. Nitrite of amyl is without doubt a powerful agent in its action on the economy, and yet my experience with it on animals would seem to show that with proper care and a due understanding of its physiological action it is a safe remedy. By this is meant that it does not act unexpectedly and out of proportion to the dose. I have never seen indications of anything such as constantly happens in the use of chloroform upon dogs, sudden arrest of the heart's action, unexpected death, the mysterious production of symptoms apparently out of proportion to the amount given. On the other hand, I have frequently been astonished at the ease with which very serious symptoms have been shaken off, the animal reacting rapidly from a condition on the very border lines of death.

ART. IV.—*Cold Water as an Oxytocic.* By S. H. GARVIN, M D.,
of Louisville, Ky.

THE therapeutic value of cold water is generally known, but its power as an oxytocic has been overlooked, or, at least, has not been insisted on as it should be. Its efficacy in exciting contraction of the uterus in post-partum hemorrhage is well established, and the four following cases, selected from a number of others successfully treated by this agent, afford ample demonstration of its value as an oxytocic:—

CASE I.—Mary A., æt. 25; first pregnancy; had been in labour about fifteen hours under the care of a midwife when I saw her at 1 o'clock P. M.; she had suffered no pain of any kind for several hours; during which time she slept two hours; pulse was 84, soft and regular, and there was no excitement whatever; the membranes had ruptured about 4 o'clock A. M. On examination, found the mouth of the uterus fully dilated, and the soft parts in good condition, nothing being required but a few strong pains to finish the labour. Having no ergot with me, and not regarding the forceps necessary, I attempted to bring on contractions by gentle friction to the os uteri and vagina; after sufficient length of time had been spent in that way, and nothing accomplished, I resorted to cloths wrung out of iced water, and placed over the abdomen; not more than ten minutes elapsed from the beginning of this procedure before the pains had returned in full force, and in an hour the patient was delivered of a well-developed female child, which, although asphyxiated, was soon revived by the usual means.

CASE II.—Was sent for at 11 o'clock P. M. to see Mrs. H., a delicate lady in labour with her second child; found her in good condition; the os uteri had just begun to dilate; from this time until about 3 o'clock A. M., the labour had progressed well, the mouth of the womb being about two-thirds dilated, when the pains suddenly grew less frequent and powerful, and finally ceased to do more than annoy the patient; on examination, I found the parts soft and dilatable; cold water was now applied to the abdomen, and in a very few minutes the contractions resumed their power and frequency, and the labour proceeded rapidly to a favourable termination.

CASE III.—Fanny, æt. about 18, under the care of a midwife, had been in labour twelve hours, when the pain ceased, and there was no further progress for four hours. I was then sent for, and found her to be a stout, healthy-looking coloured girl in labour with her first child; she was suffering no pain; pulse slightly accelerated; had evacuated her bowels about three hours before, and passed her water just before my arrival; on examination I found the membranes intact, the os uteri and vagina in good condition, the former well dilated; I immediately had iced water applied to the abdomen, which soon brought on contractions, almost the very first of which ruptured the membranes, and the labour was rapidly terminated by the safe deliverance of the mother of a large female child.

CASE IV.—Was called about 2 o'clock A. M. to see Mrs. A., who was in labour with her second child; she was a moderately well-developed lady, 24 years of age, and had passed through her first labour without an

undue amount of trouble. She had been in labour since 9 o'clock of the preceding evening. On examination, I found the os uteri dilated to about the size of a silver quarter, and the soft parts in good condition; castor oil, which had been taken four hours previously, acted at 3 o'clock; the pains were regular and efficient up to about 5 o'clock, when the membranes ruptured, and they ceased altogether; the patient slept for about an hour; on awaking, the uterus was still quiescent, and could not be stimulated to action by friction of the os and vagina, and such like minor means as are commonly resorted to. Cloths wrung out of iced water were now applied, and within fifteen minutes, the pains were acting with full power and proper frequency; by 8 o'clock, she was delivered of a well-developed male child.

Remarks.—In comparing the value of cold water with other uterine motor stimulants, ergot, generally considered the most reliable, and consequently more used than all the rest of the oxytocics, may be fairly taken as the representative of the class. Probably no remedy in the materia medica, since its introduction by Dr. Stearns in 1807, has been more lauded, and at the same time more abused than this, which is one of the best proofs that it is an agent of power for good or evil, according as it is used judiciously or ignorantly; that it has merits that will cause it to hold a prominent place in the estimation of the profession is, in my opinion, undeniable, but that it is superior to all the rest of its class, I very much question, and believe that nothing more is necessary to convince others of the fact than a fair trial of iced water in the manner here recommended. Ergot, by its irritant action upon the nerves of the uterus at full term, throws that organ into spasmodic contraction, the pains are more powerful than in natural labour, and so frequent that there seems to be no intermission between them; from this abnormal condition of things, while great suffering is common to the mother, there is danger to the life of both herself and infant.

No doubt the indiscriminate use of this medicine has been the cause of many of the evil consequences laid to its door, nearly all the cases of rupture of the uterus, vagina, and perineum having occurred in the hands of ignorant practitioners and midwives, who seem to regard it as their sheet-anchor in difficult cases. Dr. Hodge says, in every case of rupture of the uterus which he has witnessed, with perhaps one exception, *secale cornutum* had been administered. While these accidents are not likely to happen, and I may say never would, if the medicine were judiciously used, there are others which cannot be avoided by the best educated and most experienced practitioners; prominent among the dangers to the mother that have not been mentioned, are puerperal convulsions, in consequence of the intense nervous excitement and cerebral congestion that are sometimes produced; proidentia of the uterus and bladder have been attributed to its violent action by Drs. Dewees and Barnes; and retention of the placenta, and hour-glass contraction, are troubles properly chargeable to ergot; while in

the child its deleterious effect is evidenced by the number of still-births following its use, especially in cases that are at all delayed.

Having in a few words, so far as seems to me necessary, represented the opinion of the profession in regard to the dangers arising from the use of ergot, I will now, as briefly as possible, present what I have to say of cold water as an oxytocic. Cold, when brought in contact with the surface, though locally depressing through its communication with the nervous centres, acts as a stimulant, affecting the whole system or only certain organs, accordingly, as it is generally or locally applied. All are familiar with the effect of cold water sprinkled upon the face in attacks of syncope, also its more powerful stimulant influence upon the brain in narcotic poisoning. It does not act as ergot, producing by its toxic influence on the nervous system an abnormal and dangerous stimulation of the parts which are affected by it, but the reverse; the dormant or flagging powers are, as it were, awakened and revived to renewed action, a normal state of affairs is re-established, and the functions are carried on as they were previous to their failure. The only objection that can be urged to the use of cold water in such cases, is the liability arising therefrom of the patient taking cold, an objection which, I think, can scarcely hold good, if care be exercised in the application of the remedy. All danger from that source may be obviated by the following plan of procedure: After having made water thoroughly cold by putting sufficient of ice in it, a cloth (nothing better than a large coarse towel) should be dipped in it, and then wrung or squeezed between the hands, until only sufficient water remains to wet the part to which it is to be applied, without running down around the patient; this should be quickly placed upon the abdomen, so that as much of the cold will be retained as possible; the cloth should be changed just as soon as it begins to become warm, from ten to fifteen minutes being generally sufficiently long to restore the pains to natural power and frequency. Thus applied, cold water, I believe, will excite, by reflex action, the uterine contraction in any case, providing the nerve force be not so far expended as to fail to respond to the excitation of a uterine motor stimulant.

ART. V.—*Climacteric Insanity*. By W. J. CONKLIN, M. D., Assistant Physician to the Southern Ohio Lunatic Asylum, Dayton, Ohio.

THE physiological development of the human organism is attended with two eras of peculiar nervous instability, the first at puberty, and the second at the change of life. Distinctly marked as are these eras in the male, the greater changes which the female economy undergoes, marking the beginning and the end of that uterine life so distinctive of the sex, render them of especial interest. The symptoms of the mental disease lighted

up at each of these revolutionary periods, are so uniform and characteristic, that authors are now generally agreed in describing them as distinct families, under the names of Insanity of Pubescence and Climacteric Insanity. The mental irregularities of puberty have been well studied by many writers, while those of the climacteric period have scarcely received the attention their frequency and importance deserve. In the present paper we hope to point out some of the peculiar phases assumed by mental disease at this latter period, and with this view shall analyze fifty-seven cases of climacteric disease observed in this institution.

The advocates of the physical theory of insanity find no stronger proofs of their position than the close inter-relation existing between disorders of the reproductive organs and disordered intellection. That irregularities or even radical changes of the menstrual function should lead to unsoundness of mind, is the more readily believed, when we recall how much the female organism all through life is controlled by the activity of the ovaries. The ordinary affections of the uterine organs, amenorrhœa, menorrhagia, dysmenorrhœa, and especially leucorrhœa, are almost invariably attended with greater or less disorder of the affective faculties.

It is well known that many insane women suffer painful exacerbations of their disease at their menstrual periods. Every asylum presents cases in whom, save alone during the few days associated with the catamenial flow, it is difficult to discover any departure from sanity. However, at these periods, they pass through a short but violent attack of mania, characterized by lewdness of thought and act contrasting strongly with their usual habit. With each recurring period the same experience is gone through with, or, perhaps, one or two periods are passed safely lighting up false hopes. At length the return to health in the intervals becomes less marked and the sufferers gradually become demented.

A very decided alteration in the mental and physical natures is experienced by most women while the system is accommodating itself to the changes which this crisis ushers in. The derangement of the sympathetic system of nerves is shown in the sense of heat, flushing, sinking sensations at the epigastrium, irregular heart action and kindred phenomena which are almost invariably present.

The mental symptoms are equally prominent; the patient is sleepless and restless; she becomes moody, vacillating in purpose and capricious in temper. Wandering pains and palpitation of the heart beget fears of graver troubles; the ordinary trials of every-day life unduly annoy her. This gloomy atmosphere in which she lives may clear up in the sunshine of restored health, or the clouds may grow darker, until her fancies become a part of her mental existence influencing and controlling her actions, when her insanity is placed beyond question.

It not infrequently happens, that where avowed insanity is not lighted up, an evident alteration in the character of the individual can be traced

from this date: a morbid distrust of every one around her, a habit of drinking or other eccentricities may embitter her life. In this manner we see the natural disturbance of mental equilibrium due to a physiological process transformed into a pathological disturbance. Why this should be so, we can only partially answer. It is certainly not the law of life that a physiological phenomenon should in and of itself become a pathological one. Statistics seem to show that a larger percentage of the female population between the ages of forty and fifty years become insane, than at any other decennial period. When the absence of puerperal causes is taken into account, which are reputed to furnish one out of every eleven insane women, it will be seen that there must be something especially causative in the changes which the organism undergoes at this period.

The causes must be sought for in some acquired or inherited deterioration of nerve element. Many have laboured all through life with a predisposition to nervous troubles like a load weighing them down, and it only required the natural instability of nerve element at this crisis to precipitate an attack of insanity. In others the insanity is simply the expression of a combination of causes: the cares and troubles of life reaching their climax when physical infirmities press heaviest and the reserve forces are least, the mental health breaks down under them. If single, or married and childless, the bitter disappointment at her aimless life; if married, successive pregnancies with their debilitating influences may enter as important factors in the causation.

This view receives support from the nature of the causes usually specified by friends and examining physicians, such as grief, family troubles, religion, ill health—a symptom in many cases being mistaken for the cause.

It is extremely difficult to gather the facts as to the mental condition of the ancestry. It is now a well-recognized fact, that in estimating the hereditary taint, the ancestry should be interrogated with reference to the whole class of neuroses, since any of them may, in the next generation, lead to insanity, or, at least, the insane neurosis, which requires only a trivial cause to excite an attack of insanity. I regret that I cannot offer full statistics on this point, but the records of the asylum only furnish information as to the presence of insanity. In the following table I have included insane members of the same family as affording, in the absence of precise information, strong presumptive evidence of hereditary taint.

Grandmother had been insane in	2 cases.
Mother	3 "
Father	2 "
Sisters or brothers	8 "
Cousins	2 "
Relatives not specified	8 "
Unknown	10 "
Not hereditary	22 "

Total, 57 "

Putting this table in another form, we have—

Hereditary	25
Not hereditary	22
Unknown	10

Thus it will be seen that hereditary taint was found in about 44 per cent. of the whole number of cases, and in about 55 per cent. of those whose history could be satisfactorily traced.

The change of life is usually reckoned between the ages of 40 and 50 years. Some women, however, cease menstruating at an earlier age, while in others this occurs later in life.

The age and civil condition of each case at the time the insanity was developed are shown in the following table: —

Ages.	Number of cases.	Civil condition.			Ages.	Number of cases.	Civil condition.		
		Married.	Single.	Widowed.			Married.	Single.	Widowed.
38 years	1	1			48 years	5	4	1	
39 "	1	1			49 "	6	4		2
40 "	4	3		1	50 "	3	1	1	1
41 "	3	2		1	51 "	3	2	1	
42 "	6	1	4	1	52 "	12	2		
44 "	3	1	1	1	54 "	2	1	1	
45 "	7	3	3	1	Total,	57	31	15	11
46 "	5	3	1	1					
47 "	6	2	2	2					

The larger number of cases occurred between the ages of 45 and 50.

Climacteric insanity is, as a rule, gradual in its onset: with a few exceptions the above cases showed the prodromatory symptoms already described.

In the majority of them, the mental trouble became apparent during the irregularity that preceded the final cessation of the menses.

In two, the characteristic mental symptoms were the first indication of the menopause.

In four, the insanity was suddenly developed after a terminal flooding.

In a few cases, the mental disease did not become fixed until from one to three months after the cessation, yet through despondency and minor alterations in conduct the connection was easily traced. In two sisters chorea was developed simultaneously with the mental disease. The chorea proved very severe and persisted through life. They both passed through a regular attack of insanity attended with paroxysms of excitement, and died demented.

It is hardly necessary to remark that we have not included in the above enumeration all cases of insanity occurring in the fourth decennial period.

As many women pass through their change without an unpleasant symptom, so many women become insane at the climacteric period, without the character of the mental disease being in any way modified by it.

Classifying the cases according as exaltation or depression was the prominent symptom, we find—

Mania in	5 cases.
Mania with paroxysmal excitement in	11 “
Melancholia in	41 “
Total	<hr/> 57 “

From which we infer that acute mania is of rare occurrence, being the form assumed in only five of the fifty-seven cases. Two of these were the ones before alluded to, as occurring after a terminal flooding, and in which the mental symptoms were suddenly manifested. The form of disease assumed in any case of insanity is, as Dr. Blandford strongly urges, largely due to the physical condition on the supervention of the mental disease. The larger number of climacteric cases are much broken in general health—the countenance is haggard, tongue coated, appetite lost, bowels constipated; everything, in fact, indicates the lowered bodily vitality, and the mental manifestations point to a like condition of the brain centres, hence the insanity is usually asthenic.

In compiling my tables, I have only taken those cases of first attack. The liability to a recurrence of insanity at the climacteric, in those who have suffered from an attack in early life, is very strong. In recurrent disease, cases exhibiting the motility of mind and body peculiar to mania occur in a very much larger proportion of cases, but the beginning and general history of the attacks are usually sufficient to indicate their climacteric origin.

In eleven cases periods of excitement were associated with the melancholia. These paroxysms were usually transient in duration, rarely persisting longer than a day or two, and followed by the deepest melancholia.

They were generally controlled by delusions previously existing, and assumed one of two forms: either that of terror from fear of some terrible calamity that overhung them, and attended with desperate suicidal impulses; or from the idea that they were the victims of a conspiracy in which nearest friends were engaged, and associated with homicidal impulses. In one case, the lady, usually an affectionate mother, without the slightest provocation, struck her daughter with a smoothing-iron, breaking her arm. In several other cases, attacks were repeatedly made upon kindred and friends; which assaults afterwards furnished food for the most terrible self-recrimination.

These exacerbations were usually observed at the regular monthly periods, even after the cessation of the catamenia, and especially on their return after a short absence.

Melancholia was the form assumed in about 72 per cent. of the cases observed, and presented certain well-marked characteristics.

The personal appearance of the patient vividly portrays the depressing thoughts that have so completely taken possession of her mind. Her countenance is furrowed with the lines of pain and despair; negligent in dress, she rocks to and fro, or paces her room, wringing her hands and bewailing her unhappy lot. She is led about by a vague feeling of restlessness, a desire to go—whither she neither knows nor cares; but hopes against hope to flee from her bad feelings. Not infrequently, while lamenting that she is lost beyond hope of redemption, she will show a morbid craving after sympathy, and you often hear “Oh, doctor, isn’t it awful that I am so miserable?”

Hallucinations of the several senses are rarely found, occasionally hallucinations of hearing do exist and are of unfavourable omen.

Illusions of sight are not infrequent, and sometimes give rise to great terror.

Delusions are almost invariably present, at some stage in the progress of the case. The tendency is to project self upon the foreground around which cluster all her false beliefs. These may be divided into two groups.

The members of the first group fancy themselves innocent victims, and attribute their sufferings to the evil-doings of others. These are more frequently found in that form of disease attended with paroxysmal excitement. This class is very suspicious, especially towards friends and relatives: they have a fear of poison, which often causes them to reject food; and, above all, an ever-present fear of some impending evil haunts them, and thus explains their restlessness and frightened appearance. This feeling might possibly be called a hyperæsthesia of the mind centres, and has much in common with the hyperæsthesia of the skin so frequently found. The creaking of a door or any unusual noise startles and leads them to imagine the immediate execution of plots against them. As a direct outgrowth of this class of delusions, homicidal impulses are usually found. A lady now in the asylum, whose husband owned a planing-mill, was possessed of the idea that the noise of the machinery so annoyed the neighbours that they were determined to mob him and kill the family. She used every means to persuade her husband to give up the mill, which failing, she set fire to her house and burned it to the ground. Another lady, the wife of a prosperous merchant, whose married life had been a pleasant one, began to entertain groundless suspicions of her husband’s constancy, and finally instituted proceedings for a divorce, much to the mortification of all her friends.

The second group includes those who consider themselves the authors of their own misery, and believe their sins have removed them from the pale of God’s mercy. These are the common delusions in the purely melancholic form, and, besides being the most painful ones met with among

the insane, are those considered distinctive of climacteric disease. In a large proportion of the cases—fully two-thirds of the number entering into this analysis—that indescribable feeling of the soul being lost was present. Its origin can be traced to an overwhelming conviction of their utter sinfulness. They quite often labour under the distinct delusion of having committed the unpardonable sin. When interrogated, you will find it oftener to be a sin of omission than of commission.

The feeling of being compelled to pass through some terrible punishment in expiation of their sins is quite common. Several of the above cases imagined that a bottomless gulf, filled with all the torments that the mind of a fiend could invent, was open before them, and which they were slowly approaching, without power to turn back or escape. The delusions of this group are usually associated with suicidal impulses. The unhappy sufferers meditate suicide either as offering means of escape from their gloomy feelings, or with the hope that they can thus atone for their crimes. According to my observation, a larger number and more determined cases of the suicidal propensity are found in climacteric than in any other form of insanity.

In 57 cases	. . . . .	26 were suicidal.
		25 were not suicidal.
		6 unknown.

Showing suicidal tendencies to have been present in about 50 per cent.; more than half of whom made one or more distinct attempts.

Like all suicidal patients, there are two periods of especial danger: 1st. Early in the morning, when they are very liable to give way to their morbid impulses. Often a lunch before rising will, for the time being, scatter all such notions. 2d. During the period of convalescence. When everything seems to promise a speedy and complete recovery the nurses are apt to be less watchful, and the patient may make a successful attempt during a temporary exacerbation to which all are so liable.

The appetite is capricious. In many cases there exists a morbid propensity for stimulants, and the temporary relief they afford often leads to the formation of unfortunate appetites. A lady, lately under treatment, had such an irresistible craving for alcoholic stimulants, that she would drink everything within her reach containing alcohol—as camphor, hair-oil, &c. She was constantly on the search for stimulants, and would drink to intoxication at every opportunity. Often they crave the most indigestible articles of food. But the most troublesome irregularity, and one which occurs in a large percentage of the cases, is the refusal to eat. In some cases, especially in the earlier stages of the disease, it results from actual loss of appetite, the mere presence of food oftentimes being sufficient to cause nausea. Again, it is the legitimate outgrowth of delusions, arising in some cases from fear of poison, and others will say that they are “too wicked to eat,” “it is not God’s will,” “I will be lost anyway,” etc.

Others, again, refuse food through suicidal intent ; they hope to starve themselves to death. But whatever may be the cause, owing to the already broken-down physical condition, it is attended with danger ; and the effect is speedily seen in an increase of the mental symptoms, and in the furred tongue, foul breath, and sordes on teeth. It must be promptly met by the adoption of the ordinary means in every asylum, and in the failure of these, the use of the stomach pump or nasal tube must not be delayed.

Since so many of the cases upon which this report is based are still under treatment, I am unable to compile a satisfactory table showing the terminations of this form of insanity. The following table gives the terminations of the 57 cases :—

Recovered	.	.	.	.	.	.	.	.	.	25
Removed	{	Improved	.	.	.	.	.	.	.	6
		Unimproved	.	.	.	.	.	.	.	4
Remaining	{	Demented	.	.	.	.	.	.	.	3
		Termination uncertain	.	.	.	.	.	.	.	15
Died	.	.	.	.	.	.	.	.	.	4
										<hr/>
Total	.	.	.	.	.	.	.	.	.	57

From which statement we gather that the prognosis is favourable. Of those still, remaining under treatment, three are now demented ; of the fifteen others, several afford fair prospects of a speedy recovery, while for some the outlook is dreary indeed.

Two of the deaths were evidently from exhaustion following continued depression and refusal of food. For quite a while before death in each case we were compelled to administer nourishment by means of the pump. The other two deaths were the choreic sisters before alluded to.

The following table shows the duration of the disease in those who recovered :—

Under two months	.	.	.	.	.	.	2 cases.
" four "	.	.	.	.	.	.	5 "
" six "	.	.	.	.	.	.	6 "
" eight "	.	.	.	.	.	.	4 "
" ten "	.	.	.	.	.	.	3 "
" one year	.	.	.	.	.	.	3 "
" two years	.	.	.	.	.	.	2 "
							<hr/>
Total	.	.	.	.	.	.	25 "

From which it will be seen that about two-thirds of the cases recovered in less than eight months from the beginning of the attack.

Many of the milder cases can be safely treated out of an asylum, but change of scene and removal from the sympathy of friends, which too often only feeds the disease, will materially shorten the attack.

Light occupation, out-door exercise, and amusements, anything in fact that can call into action the defective will-power and raise the thoughts to a higher plane than self, will prove highly beneficial.

The friends must in all cases be warned of the danger of suicide, even when no such intention appears on the surface.

In many cases opium administered in large doses proves a very valuable agent, but a drawback to its use is the liability to the formation of the opium-habit—a liability stronger at this than at any other period of life. While the depression is most marked, or during the paroxysms of excitement, the following prescription is useful: R. Chloral hydrat., potassii bromidi, āā ʒij; spts. frumenti, syrupi simplicis, āā fʒj. M. Sig.: Tablespoonful in a wineglassful of water every four hours.

A glass of ale will often act like a charm in calming an excited patient.

Tonic medicines, however, constitute the chief therapeutical means. First among tonics we must urge the virtues of a good nutritious diet. In this, as in so many other nervous disorders, liberal allowances of food, taken at least four times a day, will be attended with immediate improvement. Long abstinence must be especially guarded against; a lunch before getting up in the morning, and again before retiring at night, is advisable. Under this feeding, the pain in stomach, foul breath, coated tongue, and constipation which may be pleaded for not eating, will often rapidly disappear. I have frequently seen great benefit result from the administration of small doses of quinia in combination with the pyrophosphate of iron and Horsford's acid phosphates.

Constipation is almost invariably present, and is a source of much annoyance to the patient, who frequently resorts to the most active cathartics. These often fail to move the bowels, and occasionally do much harm. The real seat of the torpidity is in the brain, not in the intestines; in fact, when purgatives have failed, a good dose or two of opium will often accomplish the object. As a rule, gentle laxatives and tonics will accomplish all that is necessary, and leave the intestinal tract in much better condition.

ART. VI.—*On the Relations of Leucocythæmia and Pseudoleukæmia.*

By HORATIO C. WOOD, JR., M.D., Physician and Lecturer on Clinical Medicine at the Philadelphia Hospital.

THE details of the natural history of leucocythæmia have long since been so well worked out as to need no discussion here. It is universally acknowledged that there are two chief varieties—the one in which the lymphatic system is chiefly, the other in which the spleen is pre-eminently, affected. The opinion that they are one disease in different forms, not two diverse affections, is founded on two facts: first, the resemblance of their general clinical histories; second, in many cases the two are united, the spleen and lymphatics being almost equally implicated.

As far as I know, Dr. Bonfils (*Recueil des Travaux de la Société Méd. d'Observation*, 1857-58) was the first to call attention to a disorder which, in its clinical history and post-mortem anatomy, so closely simulates lymphatic leucocythæmia, as to be indistinguishable from it, save only by the examination of the blood, which contains no excess of white blood-corpuscles. The same indolent enlargement of the glands, the same tendency to diarrhœa and hemorrhages, the same apparently causeless yet ever deepening anæmia, the same remorseless march towards death, mark the clinical history of each disease, and post-mortem examinations reveal no differences in the anatomical lesions of the glands. There is, however, one anatomical change, not infrequently met with in leucocythæmia, which has rarely been noted in pseudoleukæmia, namely, the formation of masses of lymphatic tissue in the various viscera. But this, I think, cannot be allowed to be really a point of difference; the masses alluded to are not new formations, but are rather the results of hyperplasia of the microscopic lymphatic clusters or single cells, whose presence Von Reclinghausen has demonstrated in all the glandular organs. In a word, the general hyperplasia of the tissue concerned has affected even the minutest specks of it, and rendered them apparent. I see nothing strange in this, and believe the reason that similar appearances have not been seen more frequently in pseudoleukæmia, is that they have been so seldom looked for. Dr. Cornil (*Archives Générales de Médecine*, sér. li., tom. vi., 1865) states that M. Hérard has observed this apparently new formation of lymphatic tissue in a case of the latter disease, in the lungs, ovaries, and mucous membrane of the stomach. The existence and clinical history of pseudoleukæmia, be it understood, do not rest merely upon the authority of Dr. Bonfils, but, under various names (Adénie, Hodgkin's Disease, etc.), its natural history has been well developed by several observers. As cases of true leukæmia are very rare in which the spleen does not finally become involved, so in all the described cases of adénie enlargement of the spleen has finally occurred, except in a few instances, in which death took place very early from suffocation, owing to pressure of the enlarged glands upon the trachea.

In Guy's Hospital report, Dr. Wilks, under the misnomer¹ of Hodgkin's disease, described cases of pseudoleukæmia, in which the enlargement of the spleen was a more prominent feature. These evidently correspond to the mixed cases of leucocythæmia—those in which the spleen and lymphatics share together the brunt of the attack.

I now desire to show that there is still a third form of pseudoleukæmia—a *splenic variety*. Under the names of tumour of the spleen, splenic

¹ I say *misnomer* for three reasons: 1. Similar cases had been reported before those of Dr. Hodgkin. 2. Dr. Hodgkin failed to appreciate the relations or nature of the disease. 3. No microscopic examination of the blood having been made, it must be forever uncertain whether the cases represented the disease in question.

cachexia, &c., from time far back, medical records furnish accounts of cases which I believe represent this affection. To analyze these records, and weigh the evidence, would be at once a laborious and not very satisfactory course. The following case from my own note-book is sufficient of itself to prove the point:—

CASE I.—In August, 1870, I was asked by Dr. Fricke to see, with him, M. —, aged about 30 years, who had served in the army during the last six months of the rebellion, chiefly in Virginia, much of the time in malarious districts, during which he suffered severely from camp-diarrhœa or dysentery, but never had any distinctly malarious disease. After his return, he resumed his occupation, that of a confectioner. At this time, he states, he was an exceedingly powerful man, lifting a barrel of flour with ease. His habits were in every respect moral; strictly temperate, he never has had syphilis or gonorrhœa. His work was very heavy, consisting chiefly in kneading and handling immense pound-cakes, and was done altogether with his right hand, his body being bent sharply to the left in a constrained position. To this he himself attributed his attack. His wife, after his death, stated that ever since she had known him—three years—he had been troubled with looseness of the bowels and sudden attacks of diarrhœa. Four months ago he was taken with a dragging and heavy pain in the back and left side. During the next two months he had occasional attacks of diarrhœa, but was treated chiefly for the persistent pain, which was believed to be rheumatism. During the last two months he has lost flesh and strength rapidly, and a few days ago sent for Dr. Fricke, who at once determined the case to be one of diseased spleen. The following is taken from my note-book:—

August 15. Very thin and weak, but able to walk about the room. Skin natural in colour but pale, and temperature normal. Tongue clean. Heart and lungs normal. Abdomen enlarged, apparently free from fluid. Spleen very much enlarged, area of decided percussion dulness $5\frac{1}{2}$ inches vertically, $6\frac{1}{2}$ transversely; surface smooth, hard, edges rounded; decided tenderness when strong pressure is made upon it. Liver enlarged, the smooth edge reaching about an inch below the ribs; vertical percussion dulness $5\frac{1}{2}$ inches. Urine normal, save only that it contains some minute crystals of phosphates and a good deal of mucus. Has not either sexual desire or power, nor has he had for two months. Legs slightly œdematous. Has had iron and quinia, and an ointment of iron and belladonna over region of spleen. Examined, with Dr. Fricke, blood microscopically; certainly no increase in white blood-corpuscles.

16th. Has decided fever this morning. Ordered tr. iodin. comp. gtt. v, t. d.

17th. Some fever; skin hot and dry.

25th. Worse since last entry; feet very much swollen; is weaker and more emaciated; has had fever occasionally; a good deal of irritation of the stomach, possibly caused by iodine, and also diarrhœa. Examined blood carefully microscopically; the white blood-corpuscles found were very few in number, certainly below rather than above the normal proportion. Ordered tr. ferri chl. gtt. xxxv, and cinchon. sulph. gr. ii, t. d.; also decoction of broom (*Scoparium*).

28th. No decided change, but marked increase in flow of urine.

30th. No especial change since last entry; has had no fever for several days.

September 12. Not very much changed, but decidedly paler and weaker; hardly able to walk a few steps; occasionally has fever, no regularity perceptible in its attacks; spleen, by palpation and percussion, $8\frac{1}{2}$ inches transversely by 6 vertically, apparently not quite so hard as before, smooth; vertical liver-dulness 5 inches; pulse 96, excessively dichrotic; a very decided basal systolic murmur, anæmic in character of its sound; tongue clean; appetite pretty good; legs very œdematous.

29th. No change; merely a steady advance in severity of symptoms; more or less frequent attacks of diarrhœa and of fever; progressive emaciation; great loss of strength, so that he is not now able to stand alone; general hue of skin that of intense anæmia; lips almost white; nothing like cancerous cachexia; no œdema now (probably partly from his being constantly recumbent); decided ascites; spleen very hard; lymphatics of neck, axilla, and groin decidedly but not greatly enlarged.

October 1. Examined blood microscopically: certainly diminution, rather than excess, in proportionate number of white blood-corpuscles; not more than one field of an $\frac{1}{3}$ th in three contained any, and only once, out of a number, were two found in a single field; red corpuscles pale, showing no tendency to adhere in rouleaux.

Sth. Died quietly of exhaustion.

Autopsy, 36 hours after death.—Body emaciated, pale. *Thorax.* Pleura containing a large quantity of serous fluid. Lungs healthy. Bloodvessels normal. Heart small, pale, somewhat soft; valves healthy. *Abdomen.* Liver very much enlarged, fatty, nutmeg; no heterologous deposits in it; consistence much firmer than normal. Pancreas large, hard. Stomach normal. Intestines thin; their mucous membrane pale; no enlargement of the simple glands perceptible; Peyer's glands a little more prominent than usual; not ulcerated; supra-renal capsules normal. Kidneys rather small, normal; no heterologous growths discovered. Spleen very much enlarged and hardened; as laid on a plate, eight inches long, five and three-quarters broad, and nearly four thick; colour very bright red, almost scarlet, mottled with numerous dark spots and with some yellowish ones; capsule readily detachable; showing on section a narrow external zone of bright red; internally, darker red, a sort of reddish liver-coloured, with numerous very dark spots or masses closely placed. There were also a few masses of a straw-yellow colour scattered through the spleen. These masses were of various shapes and sizes; not very numerous. The largest was of a wedge-shape, the base against the surface of the spleen; the edges irregular in places, folded in, with one or two lines of deep red external to them and everywhere following their contour. This patch is one and a quarter inch long and three-quarters of an inch across the base. The whitish material appeared to be formed in centre of the dark patches; at least, quite a number of such spots exhibited a minute central whitish spot, similar in appearance to the larger whitish ones. *Lymphatics* enlarged both in thorax and abdomen, and still more so in the axilla, neck, and crural regions. The only superficial glands taken out were from the groin. These were about an inch in length, and were larger than the internal glands.

Microscopic Examination.—*Spleen.* Pulp containing usual elements, fibrous tissue, nucleated trabecular cells, and pulp cells. The latter appeared more granular and less distinctly nucleated than normally. *Red Spots.* These appeared to be chiefly coloured by an intense hyperæmia; not so much, however, by the distinct presence of blood as by an excessive

overplus of colouring-matter. The latter was not contained so much in distinct globules, as it appeared to penetrate everything. There were very few pigment granules. The red spots could be in great measure washed out, and, under the microscope, presented no other elements than such as were found in the pulp elsewhere; only everything intensely red. A very few pigment granules were seen, and in one place was found, in the centre of a dark spot, a somewhat cylindrical, dark green, hard, flattened mass of nearly a line long. Nowhere else were any indications found of masses of blood having existed. *Whitish Spots.* Composed almost entirely of cells similar to those of the pulp, but smaller ($\frac{1}{2400}$ to $\frac{1}{4000}$), shrunken, a little more inclined to be globular, never nucleated, and filled with granules; some oil, but not much. *Malpighian corpuscles* were not at all evident. I dissected one out of the centre of one of the dark spots. It appeared normal, save that it was of an intensely red colour.

The readers of this journal are all familiar with the views advanced by Prof. Neumann (*Archives der Heilkunde*, 1869), that the marrow of bone plays a very important part in the life-history of the blood. In a clinical paper like the present, unnecessary physiological discussions are out of place, and, therefore, I avoid entirely entering upon an examination of the truth of his doctrines, confining my attention to the practical point which has been suggested by them, and may be embodied in the question—Is there any change in the marrow of bones at all peculiar to leucocythæmia? In attempting to answer this, two points are evidently to be made. It must be determined whether the theoretical hyperplasia of the leucocytes of the medulla occurs in other diseases, as well as whether it is present in leukæmia.

Every one knows that as the long bones develop, the shaft-marrow becomes more and more resolved into a mass of fat-cells, until, as adult life is reached, the leucocytes almost entirely disappear, whilst in the vertebra and other spongy bones the leucocytes crowd the marrow during its whole life. It is evidently then in the former position that the hyperplasia alluded to is most easily to be recognized. I am not aware of any especial record of microscopical studies of the marrow in the various diseases of humanity, but the fact that the fatty state of the marrow is everywhere spoken of as universal would seem to prove that any other condition must be so rare as to have escaped observation. I am, however, able to offer more positive evidence, having made a number of examinations of long bones taken from patients dead of various chronic diseases, and never, except in a single case, found any abundance of the leucocytes. In the exceptional instance there was very marked general enlargement of the lymphatics and of the spleen, so that, in face of the fact that circumstances prevented a complete examination of the case, it cannot be fairly allowed to militate against the belief in the rarity of hyperplasia of the true medullary cells.

In regard to leucocythæmia, there are three published records bearing upon the point in question, which are hereto appended. The first of these

is taken from the abstract of the inaugural dissertation of Dr. Chas. W. Eales, Leipzig, 1870, published in the *Quarterly Journal Micr. Sci.*, Jan. 1871, and in the *Philadelphia Medical Times*:—

“Cases of leukæmia were also investigated. In a case of Neumann’s he had previously observed that the vascular network, generally so richly developed in the medulla, was absent. The medullary cells were not only extremely numerous, but showed very remarkable difference in size. The few vessels which remained, contained almost entirely red corpuscles. These very interesting results agree perfectly with the view that the abundance of white cells in the blood, which characterizes this disease, may be due to a diminished conversion of white cells into red, as well as to an increased production of the former. It is, however, clear, from the occasional occurrence of coloured nucleated cells in the blood of leukæmic persons, that the blood metamorphosis cannot be entirely suspended, the probable explanation being that these cells have left the marrow before their complete transformation.

“Eales had the opportunity of examining a femur and a rib of a leukæmic person, but not till they had been long preserved in spirit. In these specimens he found the medullary cells well developed and numerous, the vessels containing what looked like white and red corpuscles. No transitional forms were seen, but the weight of these observations was diminished by the fact that they were not made, as Neumann’s were, on fresh specimens.”

The second record was published in *Virchow’s Archives* for March of the present year. The abstract of it in the *Medical Times* of July 15 is as follows:—

“The patient was received into the hospital on account of an ankylosis of the elbow and knee-joint of fifteen years’ duration. He stated that during the last few days severe hemorrhage had taken place from two fistulous openings near the knee-joint, on account of which, and of the long-continued suppuration, amputation of the joint was deemed advisable. Death, with well-marked symptoms of pyæmia, followed on the twelfth day after the operation. The marked paleness and cachexia of the patient during life gave rise to the suspicion of leukæmia. The blood was therefore examined, and an enormous increase in the number of white blood-corpuscles discovered. A slight but decided increase in the area of percussion dullness over the spleen was also recognized.”

A detailed post-mortem report follows, from which we extract the following:—

“The femur and tibia were divided longitudinally, and it was found that the bone-structure, which had almost disappeared, had been replaced by a soft, in places almost gelatinous, tissue, which was in general of a dark grayish-red colour, closely resembling the splenic pulp, here and there, however, of a yellowish hue like adipose tissue. The tibia was enlarged, the lamina only five millimetres in thickness, and exceedingly hard. A layer of the same character was found limiting the medullary cavity of the bone, so that it appeared as if two thin, bony, concentric tubes had been placed the one inside the other, the intervening space being filled with rapidly proliferating medullary tissue. In many places the external lamina had been perforated, and had, therefore, acquired a cribriform appearance. From these openings small fungous growths of medullary tissue projected. The cavity of the knee-joint was completely filled with a new growth resembling adipose tissue. The cartilages had also been perforated, and the proliferating medulla of the bones projected into the cavity of the knee-joint and became continuous with the growth just described. The spleen was the seat of old infarcti, and also of new hyperplastic formations. The tonsils and lymphatic follicles of the tongue were enlarged, and in places projected like polypoid growths. Microscopically, the medulla consisted of round lymphoid cells, myeloplacques, and here and there the yellow nucleated bodies of a high refractive power described by Neumann. In the spleen, the

Malpighian corpuscles were found to be hypertrophied, consisting of lymphatic cells so closely packed that a reticulum could with difficulty be distinguished. Numerous small lymphomatous growths were also found in the liver."

The following case was reported by Prof. Neumann in the *Archives der Heilkunde*, XI., I., and is copied into *Schmidt's Jahrbücher*, July, 1871:—

"A man, thirty years old, died after the ordinary symptoms of leucocythæmia. At the autopsy, the skull was found to have, on the inner side of the frontal and parietal bones, numerous small pointed osteophytes, and the diploë, instead of the normal red, was of a dirty yellowish-green colour. The marrow of the ribs, of the sternum, of one of the vertebrae, of the diaphyses of the right humerus, as well as of the shaft of the latter, was of the same dirty yellowish-green colour, and of a tough, slimy consistency; upon the object-glass it spread itself out, looking as if a purulent osteomyelitis had affected every bone of the skeleton. On exposure of the divided surface of a bone to the air, the yellowish colour was soon lost, and was replaced by a pale red colour. The liver, spleen, and kidneys were very much enlarged, and in the two former there were masses of new lymphoid formations as large and larger than peas. The bronchial glands were deeply coloured with pigment, but not much enlarged, the mesenteric slightly swollen, soft and yellowish, the inguinal still more distinct, enlarged, succulent, and reddish-white. The solitary follicles of the ilium were very much enlarged. During life, there had been found in the blood numerous colourless cells of 0.008—0.013 mtr. in diameter, with sometimes single, sometimes divided nuclei; also some half-way cells between the colourless and coloured blood-corpuscles, in the shape of nucleated coloured cells. These cells were exactly like the transitional forms found earlier by Prof. Neumann in the bone marrow. The blood taken at the autopsy from the veins of the head and spleen, from the cephalic vein and the cerebral sinuses, offered much more seldom many nuclei in the colourless cells, but mostly a single circular, or more generally biscuit-shape, nucleus. The blood of the cerebral sinus showed more frequently than the other veins the transition forms, and also, even in the fresh condition, needle-shaped crystalline forms, found in the other blood much more sparingly, and only after commencing putrefaction. In the marrow were found numerous cells, similar to those in the blood, but of very dissimilar sizes, 0.0033—0.0165 mtr. in diameter; also numerous cells with clear bladder-like nucleus and nucleolus. On chemical examination, the marrow afforded to Dr. E. Salkowski, with certainty, hypoxanthin, formic acid, and a fatty acid (Butyric?).

To this record I am able to add a hitherto unpublished case, which occurred at the German Hospital of this city. The man died whilst under the care of Dr. A. Fricke, to whom I am indebted for the opportunity of studying the case during life and after death. Whilst the man was living, I made several examinations of the blood, and found a marked increase in the number of the white blood-corpuscles, many of which were very irregular and often apparently adhering, so as to make little masses of germinal matter.

CASE II.—Louis B., æt. 28, German, a pocketbook-maker, states that he was very healthy up to July, 1867, when, after very free and protracted sea-bathing for some weeks, he was seized with diarrhœa, accompanied by pain in his left flank, and an apparent fulness or enlargement of the region. Attributing these symptoms to the immoderate bathing, he abstained from it, and his troubles gradually disappeared, leaving him in apparently good health. In September of the same year, he emigrated to this country. About three months after this he had an attack of hemorrhage from the bowels, which readily yielded to treatment, so that in three weeks' time he thought himself perfectly well. His health continued satis-

factory for about four months, when he noticed that his stools were tinged with blood. This happened more or less constantly for two years, but as his health did not appear impaired, and he was able to work at his trade, no medical advice was sought. At the end of that period, violent melæna and hæmatemesis came on, for which he was admitted to the German Hospital, May 13, 1870. He was then profoundly prostrated from loss of blood. The spleen was only slightly increased in volume, but was tender on pressure. The liver was apparently lessened in size, and nothing abnormal could be discovered in any other viscus; the lymphatics were not enlarged. Under appropriate treatment the hemorrhage rapidly disappeared, and consentaneously the spleen began to enlarge and in a short time evidences of water in the abdominal cavity were apparent. After two weeks the ascites became so great that cathartics were resorted to, by which the water was gradually removed. On the 15th of July he was discharged from the hospital, his strength and health apparently nearly restored, but the splenic tumour still measuring $4\frac{1}{2}$ inches in breadth by 7 in length. October 12th he returned to the hospital, profoundly exhausted by fresh hemorrhage from the stomach and bowels. The spleen was now much reduced in size, but as the hemorrhage gradually ceased under treatment, and the general strength increased, it enlarged and ascites appeared as before. The abdominal effusion now steadily increased, becoming most enormous and threatening in spite of treatment, and on February 8th, 1871, he perished from a third attack of hemorrhage from the stomach and bowels.

Autopsy.—Cadaver very much emaciated, not œdematous. No external indications of enlarged lymphatics. *Head* not opened. *Lungs* normal. *Heart* normal; a small clot in the right ventricle. *Thoracic lymphatics* not enlarged. *Abdomen* containing four gallons of straw-coloured liquid. *Kidneys* normal. *Liver* fatty, weighing nearly three pounds, anæmic. *Spleen* enlarged, weighing one pound, rather soft, externally whitish mottled with carmine, internally with an external zone ($\frac{1}{4}$ to $\frac{1}{2}$ inch in thickness) of a bright carmine-red colour, within this a deep dark red—no hemorrhagic infarctions. *Intestines* full of black, tarry liquid, otherwise normal. No appreciable enlargements of abdominal lymphatics, nor any milky spots in any of the viscera. *Lumbar vertebra* on section bright carmine red. Microscopical constituents of this "juice" as follows: 1. Irregular, granular, distinctly nucleated cells, the largest having diameter of $\frac{1}{2000}$ of an inch. 2. Similar cells or corpuseles, often not nucleated and less distinctly granular. 3. Cells granular externally, clear in the central portions. 4. Cells distinctly nucleated, nucleus surrounded by a clear hyaline portion; these cells are irregular or nearly globular in shape, and between $\frac{1}{2000}$ and $\frac{1}{1000}$ inch in diameter. 5. Irregular, granular, not distinctly nucleated cells. 6. Cells, very abundant, exactly resembling lymph-corpuseles, varying from $\frac{1}{2000}$ to $\frac{5}{1000}$ inch in diameter. 7. A very few red blood-corpuseles. *Right femur* sawn open longitudinally; bone, as in other long bones, remarkably dense and thick. Marrow somewhat pulverulent; lower $\frac{1}{6}$ bright carmine red, mottled with yellowish, shading into the next $\frac{1}{3}$, which is of an intense, very dark, almost blackish carmine; this shades into the bright Indian red of the next $\frac{1}{3}$, which above shades into bright carmine, gradually giving place to the yellowish trabeculae above. *Left femur* very similar to the right, save that the deep carmine portion is shorter, and the Indian red correspondingly longer, and that the marrow of the lower $\frac{1}{6}$ has a much more transparent gelatinous look. *Microscopical Examination:* Medulla contain-

ng very little oil and very few red blood-corpuscles, made up of an immense number of cells, which are mostly irregularly globose, sometimes larger and altogether irregular in form, minutely granular, mostly distinctly nucleated, very rarely binucleated; nucleus with a distinct nucleolus; size of globular cells $\frac{7}{12000}$ to $\frac{4}{12000}$ inch. Besides these, there are some small globular cells entirely free from granules and perfectly transparent, but furnished with a distinctly granulated nucleus. *Left tibia* sawn open longitudinally. Medulla in terminal fourths nearly natural, with some carmine injection, in middle two-fourths bright carmine most of the distance, but still preserving a transparent gelatinous look, in places deep carmine and opaque. Largely made up of normal fat-cells and free fat, but with a good many cells similar to those seen in femora.

The evidence is apparently sufficient to show that, although hyperplasia of the medullary cells may not improbably occur in scrofulosis or chronic or even acute pyæmia, yet that it is an important if not characteristic lesion of leucocythæmia. Indeed, Prof. Waldeyer, on the strength of his case, goes further than this guarded statement, asserting such hyperplasia to be in certain cases the principal lesion, so that a third variety of leucocythæmia will have to be recognized.

Such being the case, the question naturally arises—does this lesion afford an anatomical difference between true and pseudoleukæmia, or is it also found in the latter disease? Unfortunately, at the time the case previously detailed was under care, my attention had not been attracted to the importance of Prof. Neumann's researches, so that no examination of the bones was made. Fortunately, the wards in the Philadelphia Hospital have enabled me in a measure to remedy this omission, and the following cases are submitted as in point:—

CASE III.—T. L., labourer; Irish; æt. forty; single; states he has not been very intemperate. Has been, during last year, much exposed to cold and wet. About two months ago, first noticed that on stooping he became giddy and sick at his stomach. This was followed by rapid loss of strength and vomiting of a light-green matter. He has had no pain at any time, save a dull sensation across the epigastrium. About five weeks ago, took a dose of senna and salts, followed by four "bilious pills," since which he has had from three to five watery stools daily, without tormina or tenesmus. Has had frequent epistaxis.

March 5. Had a profuse epistaxis this morning.

Present Condition.—Evidently profoundly anæmic. Nails and lips absolutely white. Skin very pale, somewhat clayey. Conjunctiva slightly icterode. No œdema. Tongue whitish, not coated. Pulse 110—quick, irregular, very compressible. Respirations 26. Mind dull. Lungs, on thorough physical examination nothing abnormal discoverable. Heart: Percussion dulness of normal extent. Apex beat short and quick; most marked an inch and a half to the right and a little below left nipple. A soft systolic murmur heard over right base, evidently an aortic anæmic murmur. Also in the axilla a very distinct soft arterial murmur on pressure with the stethoscope. Abdomen slightly tympanitic. No tenderness except in one spot about an inch below xyphoid cartilage. Liver not reaching below ribs, excepting left lobe, which appears to project across

epigastrium. No marked splenic enlargement. No marked enlargement of the lymphatics; the glands are, however, generally slightly enlarged; those of the groin fully as large as big cherries. Urine passed readily, normal in quantity, free from albumen, alkaline, containing abundant urates.

7th. Pulse 115. Man evidently weaker.

8th. Vomits all food and medicine; also occasionally spontaneously; evidently failing. Examined blood, no increase in white blood-corpuscles.

10th. Dying of exhaustion.

Autopsy.—*Lungs* normal. *Pleura* free from water, but adhesions in right side. *Heart* rather large, very flabby, soft, exceedingly pale. *Liver* nearly normal, but softened and exceedingly pale. *Kidneys* exceedingly pale, softened, otherwise apparently normal. *Spleen* enlarged; about five inches long; externally capsule whitish, apparently somewhat thickened, studded with irregular, hardish, broad tubercles; spleen bright carmine red; internally, dark intense red, and more brilliant brighter red, without any distinct zone of lighter colour, and without any hemorrhagic infarctions. *Femur and humerus.* Medulla of a uniform, very deep, dull carmine red; this colour persisting even through the trabecular tissue at the ends of the bones. *Vertebra* of the same tint internally. *Microscopical Examination* of medulla of femur and humerus; no fat-cells, and very rarely a single fat-globule. Tissue composed of—1st. Very abundant, very large lymph-like cells, which were rarely roundish, mostly entirely irregular in form, very granular and very distinctly nucleated. Diameter varied from $\frac{1}{12000}$ to $\frac{8}{12000}$ inch; rarely two and very rarely three nuclei in a cell. The nuclei were very large, often nearly filling the cells, sometimes reaching $\frac{5}{12000}$ inch in diameter, exceedingly distinct, with a hard, sharp boundary, granular, mostly roundish, sometimes curiously horseshoe-shaped. Acetic acid rendered these cells much less granular and nuclei more separate, where two were present. 2d. Not very abundant hyaline cells, often seen with some difficulty, very distinctly nucleated; nucleus generally, but not always, single; of two kinds—the one granular, the other not so, and looking by artificial light somewhat greenish. 3d. Nuclei free, and apparently developing into new cells.

CASE IV.—J. A. S., æt. 32; clerk; single; temperate; parents healthy. Contracted syphilis for the first time in 1862, and again in 1863. (Had buboes this time.) Had always been in good health previous to this. About six years ago, had first secondary manifestation—ulcers of the scalp. Two years ago, had very severe sore throat. Has also had severe pains in joints for three or four years. With these exceptions, has enjoyed excellent health, until three months ago. At this time he caught cold; had an annoying cough and a little sore throat; lost appetite and flesh. Has never had much pain anywhere but in the joints. He has steadily got weaker, without any more marked symptoms than the cough and loss of appetite, down to the present time. Before coming into my medical ward, had been treated in venereal with potas. iodid., without any benefit. Has had no diarrhœa.

April 29.—*Present Condition.* Profoundly anæmic. Lips, tongue, and nails absolutely white. Conjunctiva not icterode. No appreciable enlargement of liver. Very low down in left flank there is a slight space of moderate dulness extending two inches anteriorly. Heart-sounds normal, though weak, except basal systolic sound, which is very decidedly prolonged. A very marked musical bruit in both carotids, loudest on left.

Lungs normal. No œdema anywhere; no albumen in the urine. There is no increase in number of white blood-cells.

May 15. No new symptoms. Anæmia becoming, if possible, more profound, in spite of steady use of citrate of iron and ammonia. Thorough examination of blood shows that there is no increase in the white corpuscular element. The splenic enlargement is a little more positive, but still not very decided.

16th. Rapidly failing, and died next day.

Autopsy, eight hours after death.—*Lungs* normal. *Heart* large, flabby, with a considerable passive effusion in pericardial sac. *Abdomen.* Intestines normal. *Liver* firm, nutmeg; its capsule flecked with whitish spots. *Kidneys* small, not granulated; extremely pale, grayish; their substance very firm. *Spleen* enlarged, about four inches long. Internally of an intense blackish carmine colour, with some external patches of intense bright carmine; externally dark; capsule thickened. *Lymphatics* nowhere distinctly enlarged. *Blood* from right heart very liquid, showing no tendency to coagulate. *Right femur*, marrow of lower third bright carmine red; above, Indian red; not even the trabecular portion yellowish.

Microscopical Examination.—*Blood* containing fewer, rather than more, normal white corpuscles. White corpuscles very irregular; some of them very small, $\frac{2}{12000}$ in.; some of them very large, $\frac{8}{12000}$ in., irregular in shape, very distinctly nucleated, sometimes with one or more large vacuoles, exhibiting very active motion in their contained granules. Red corpuscles remarkable for their irregular outline. *Marrow* almost free from fat; composed of large cells, $\frac{7}{12000}$ in., of very irregular outline. These cells are furnished with a very large nucleus or inner cell, with evident thick walls, and are very granular; besides these, there are numerous small cells, evidently the nuclei or inner cells set free from the larger. *Spleen pulp* composed of irregular cells from $\frac{4}{12000}$ to $\frac{6}{12000}$ of an inch in diameter, very granular, containing one or very rarely two large corpuscular nuclei, and these corpuscular nuclei free in large abundance; they are granular, without discoverable nucleolus, even on addition of acetic acid; about $\frac{2}{12000}$ in. in diameter. *Kidney structure* containing a very large amount of fibrous tissue; tubes apparently wasted, often choked up with broken imperfect epithelial cells.

To the first of these cases no objection whatever can be made; in itself it is sufficient to answer the inquiry. The very decided history of syphilis may be by some raised as an objection to the second. Whilst under care, however, and, as far as could be learned, for some time previously also, there were no distinctly syphilitic symptoms, and no visceral syphilis was found after death. Proof, then, seems to be wanting, that syphilis was the immediate cause of his disorder; but if it were the cause, the case would not necessarily have to be thrown out, for it is conceivable that syphilitic dyscrasia might induce disease of the blood-making glands at present not recognizable as diverse from that of pseudoleukæmia. The case seems to bear as close a relation to pseudoleukæmia as ordinarily found, as Prof. Waldeyer's case does to leucocythæmia. Further, if it be admitted into the category, it would seem to correspond to the case of Prof. Waldeyer's in that the changes in the bone-marrow were apparently the principal lesion.

The conclusions which have been reached may now be summed up as follows: 1st. Clinically, the so-called true and false leukæmia are the same, save only in the matter of the white blood-corpuscles. 2d. All varieties of leukæmia are represented in pseudoleukæmia. 3d. Hyperplasia of the marrow of the long bones is a more or less characteristic lesion of leucocythæmia, and this lesion and all the other lesions of the solid tissues known as characteristics of leucocythæmia are equally characteristic of pseudoleukæmia. Evidently there are, therefore, two dyscrasia which, in their natural history, are precisely alike; two disorders, most mysterious in their causes, most complicated in their life features, most wide-spread and peculiar in their lesions, and yet preserving, as far as can be discovered in the minutest details, absolute identity, save only in the proportion of the corpuscular elements of the blood. Is it well to consider them distinct? Is the single point of difference really of sufficient importance to mark them as diverse species? For the following reasons, I think not: 1. The increase of the white corpuscles is not peculiar to leucocythæmia occurring in very different diseases, such as lymphomia and pyæmia, and also as a result of malarial poisoning. 2d. That in these diseases the symptom is not a constant one, but is present in some cases and not in others. 3d. That in leucocythæmia itself, the amount of increase varies indefinitely from a merely distinct rise in the proportional number, to a condition in which the white are absolutely in excess of the red corpuscles, and the blood has a "puriform" appearance. 4th. There are cases which, at one period of their course, represent pseudoleukæmia, at another leukæmia.

Of these assertions, the first two rest on such universally acknowledged clinical facts, that it is not necessary here to say much about the proofs. In regard to the existence of a leukæmic condition of the blood, in some cases of malarial disease, however, as it appears not to be generally believed in, I will state that I have myself seen it, and that an examination of the very careful and valuable paper of Drs. Meigs, Rhoads, and Pepper (*Pennsylvania Hospital Reports*, Philadelphia, 1868), on the blood in malarial diseases, must convince the most sceptical, that whilst in some cases there is no augmentation of the number of the white blood-cells, in others it is very pronounced. Of the last two propositions, the fourth alone needs any corroborating comment. As proof of its truth, I bring forward a case recorded by Prof. Bennett himself (*Clinical Lectures*, &c. New York, 1860, p. 826, Case CLXXXV.). The report of this case reads in December, 1851: "On microscopical examination of the blood, it was ascertained, that the colourless and coloured corpuscles presented their normal relative number." In the following January it is noted, "The blood had been examined from time to time, and on the third of January, a decided increase of the colourless corpuscles could be observed." In February, "Considerable groups of the white corpuscles could be seen between the rolls of coloured disks in a demonstration under the micro-

scope." February 29th, the man died. To attempt to explain away this case by stating that, previously to January, 1852, the disease had progressed up to the leukæmic point, that the records are merely the result of watching the development of the affection, is simply to refuse all evidence not agreeing with preconceived ideas. The man had distinctly suffered from the disease for at least four years and a half, had been in the hospital exhausted and emaciated, with a splenic tumour measuring $8\frac{1}{2}$ inches vertically, for months, and died in less than two months after the first increase in the white corpuscles was detected.

From the evidence that has been now brought forward, I think it must be conceded: 1st. That the leukæmic condition of the blood is neither a constant nor peculiar symptom of the so-called leucocythæmia, using the term in its widest sense, and that the latter term, as based on a mistaken pathology, ought to vanish from our systematic treatises, the word leukæmia being retained not as the name of a distinct affection, but of a comparatively unimportant symptom. 2d. That a disease or dyscrasia must be acknowledged to exist, characterized by symptoms not necessary to enumerate here, comprising all cases of the so-called leucocythæmia and pseudolenkæmia, and that some new name should be invented to distinguish it. *Splenic cachexia* or *lymphatic cachexia*, or the more general term, *hæmic cachexia*, suggest themselves, but are all more or less open to objection, and no doubt a better name can be found.

ART. VII.—*A Case of Trephining and Removal of a Minié Bullet which had passed into the Brain through a Trap-door Fracture of the Os Frontis, followed by Recovery.* By BENJAMIN HOWARD, M. D., of New York, late Professor of Clinical and Operative Surgery, and Surgeon to the Long Island College Hospital, New York, &c. &c.

BESIDES interesting points in diagnosis, the most prominent facts in this case are: That the bullet entered the skull at a great distance from the point where it penetrated the scalp; that the aperture found in the skull was about one-thirtieth smaller than the bullet which had passed through it; that the removal of the ball, deeply buried in the cerebrum, two weeks after the injury, subsequently resulted in complete recovery and robust health.

April 9, 1862. While removing the wounded from the battle-field of Pittsburg Landing, my attention was called to a soldier with a gunshot wound in the left temple, who, nevertheless, was sitting up leaning against a tree, and able to talk intelligently. He gave his name as John W. H. Underwood, Company D, Forty-fourth Indiana Infantry, æt. 19, and stated

that on the 6th he was shot in the head at the beginning of the battle. He staggered back for a short distance, fell, and remained unconscious until the next morning. On awaking he crawled to the shelter of a fallen tree, where, during the next forty-eight hours, the ground was successively gained, lost, and retaken by the United States Infantry, after which he strayed where we found him, whence he was conveyed, in the hold of a steamboat, to General Hospital, Louisville, Ky.

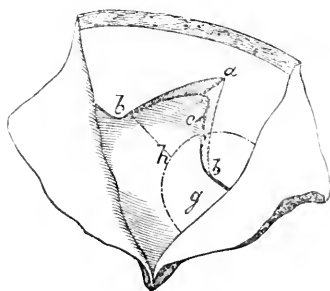
15th. The patient, on admission to hospital, exhibited unclouded intelligence, and complained of little except a pain in the head and some numbness of the left leg. The left eyelid was very œdematous, caused by two wounds apparently made by buckshot, the eyeball being uninjured. In the left temple was a wound of entrance, apparently of a Minié ball, the course of which, as shown by the probe, was beneath the skin, obliquely across the most prominent part of the forehead and beyond the median line, where the probe emerged through a small incised wound, which the patient said was made by a passing surgeon, who thereby removed the bullet which was just beneath the skin. Just above this incision there seemed to be a slight depression of the os frontis, but examination of it by the probe was so painful that it could not be continued sufficiently for a satisfactory conclusion. So far as appeared, the case was one simply of flesh wound, complicated, perhaps, with a slight depression of the os frontis and accompanied with numbness of the left leg. The treatment, in part precautionary, was directed to consist in shaving the scalp in the vicinity of the wound, application of ice-bags, low diet, and absolute rest.

Under these conditions the patient remained quite comfortable. The bowels were regular; appetite good; sleep natural. After a few days, however, symptoms of compression began to appear, and so conscious was the patient of coming danger, that he consented to any operation which might seem expedient.

Coma becoming almost complete, it was determined, on consultation with the hospital staff, to freely expose the apparent depression of the os frontis, and obey subsequent indications.

21st. Chloroform was slowly administered, producing very unpleasant spasmodic action before anæsthesia was fully accomplished. Beginning

Fig. 1.



with a T shaped incision, a free dissection was continued until the suspected part of the skull was fully exposed, when there was found in the centre of the forehead a triangular depression, deepest at its apex (Fig. 1, *a*); from the base of the triangle, on either side (*b b*), extended obliquely a fissure across the middle of the os frontis. There was no opening through the skull except that the apex of the triangle was chipped off (*a*), affording an aperture a little larger than a pin's head, but not large enough for an easy passage of an ordinary probe.

Interlocked in it, and projecting from one of the sides of the triangular fracture, was a single hair, in length about the sixteenth of an inch (*c*).

This at once suggested the presence of a foreign body beyond; for, notwithstanding the clear testimony of the patient respecting the removal of

the ball, and that he saw it when removed; the further evidence of the incision which apparently had been made for its removal; the minuteness of the aperture in the skull at the seat of fracture; the location of the fracture, which was beyond the point of greatest convexity of the forehead, whence the ball should naturally have been deflected; it was, nevertheless, impossible that this single hair could have projected itself into the fissure, and, therefore, the hair must have been carried along by some foreign body, which left it in its wake.

With this conviction, and feeling assured that the case was certainly hopeless if left to itself, it was decided to use the trephine.

The trephine was applied first as seen at *g*; the button of bone was removed, and, on introducing a probe about two inches from the surface, it struck upon a hard and apparently leaden body. Finding this opening insufficient for the removal of the foreign body, Hey's saw was used in the direction of *h*, and the entire depressed portion of bone was removed. The blackened and diffluent brain matter through which the foreign body could be detected was scooped out and washed away by a gentle stream of water from a sponge, and then, by favouring its axis with dressing forceps, I was enabled to remove the Minié bullet shown in Fig. 2, minus part of its substance, which had been apparently gouged away.

Fig. 2.



The flaps of the wound were united by sutures and adhesive plaster, and cold-water dressings applied.

The patient awoke naturally from his anaesthesia; he remarked, "The weight seems lifted off my head; my headache is nearly gone," and he was quite moderately intelligent.

He was immediately placed in a separate room kept perfectly dark and still; by alternation of attendants, one was constantly in his room, so as to prevent occasion for the slightest motion; talking was prohibited; low diet was given, and only in small quantities. For several days I visited him every two hours, night and day, and by the use of sedatives prevented his pulse rising above 80, without incurring any unnecessary depression.

April 22. Pulse 80; headache and numbness of left leg disappeared; the pupils apparently equal. The treatment was continued as at first for several days, after which medication was stopped; all the other measures, however, were rigidly continued, and an elastic compress of cotton wool was substituted for the water dressing over the wound.

June 10. Since within a few days after the operation, the patient has not uttered a complaint, and says he has had neither pain nor an unpleasant sensation. The wound is completely cicatrized; the cerebral pulsation, for some time so noticeable, has ceased to be observable, and the sub-integumental wound across the forehead is nearly healed. Darkness is no longer maintained; a moderately full diet, light reading, and occasional talking are permitted.

11th. A sister of the patient came from his distant home, and not having seen him since enlistment, surreptitiously gained an interview with him. Being called to him about midnight, I found him in a furious delirium. Pulse at 165. The previous antiphlogistic treatment was at once resumed, when the violence of the symptoms slowly abated.

16th. The patient has gradually improved, and now seems to be enjoying perfect health, needing only the exercise of caution for its continuance.

About this time I was ordered to the Army of the Potomac, and never saw the patient again. I have, however, since ascertained that no relapse afterward occurred; that on the contrary, after the expiration of his first term of service, he subsequently re-enlisted, and in the autumn of 1863 was on full duty as an able-bodied cavalryman.

Explanation of the Manner of the Entrance of the Bullet; of the Smallness of the Aperture which remained; and of the reported Removal of the Bullet by the Surgeon on the Field.—In attempting to explain facts so contradictory in appearance, we will observe, firstly, that the bullet extracted was about one-twelfth less than the average weight of such bullets.

As shown in Fig. 2, it will be seen that, beginning at *a a*, a deep groove is cut into the bullet, which, passing around it, reappears at *b b*, and then is continued in a corkscrew manner down to its spiral-shaped termination at *c*. At *d* is seen a spicula of bone, many similar to which of a smaller size were found impacted in the edges of the spiral groove, throughout its course.

The ball, its force nearly expended, on reaching *a*, Fig. 1, instead of crushing and piercing straight through the skull, caused the triangular fracture. The momentum of the ball continuing, it proceeded onwards, and, turning upon its axis, the triangular fractured portion yielded before it, moving on its base *b b*, as on hinges, until the ball, having thus bored its way through the *trap-door*, as I have ventured to designate the fracture, sprang back by its own elasticity, its extreme apex only having been chipped off by the passage of the bullet.

As regards the bullet, which was removed upon the field and seen by the patient, and the incised wound which remained in further attestation. From the deep spiral grooves gouged out of the ball in its passage through the skull, there must have been left behind upon the surface of the bone a corresponding amount of chips or shavings close beside, and probably, just below the fracture. It was here the surgeon felt the reported ball beneath the skin. It was this he cut down upon, removed, and showed to the patient—an irregular mass of lead.

Why the ball should have entered the skull at all at a point beyond, and after it had traversed the greatest convexity of the forehead, must be accounted for by some one much more competent for the task.

The most remarkable fact of all is the recovery of the patient; for this, neither skill nor attention, but the will of Providence alone, can be offered in explanation.

I have hunted up a very long list of wonderful recoveries after various injuries of the head, but find them confined chiefly to cases in which the foreign body has struck the skull and passed off; has entered it and passed out; has lodged and being accessible by way of the wound has been removed; or, has lodged and permanently remained within the skull.

The case most nearly analogous to that herein reported is one described by Baron Larrey, in which a bullet having penetrated the forehead, this eminent surgeon trephined the occiput, and through the back door thus made, the ball dropped upon the floor,—but the patient died.

I have failed to find another case than the above, in which a missile out of reach and out of sight has been discovered, and removed from the brain by trephining—a permanent recovery afterward resulting.

ART. VIII.—*On Spurious Consumption.* By D. FRANCIS CONDIE,
M. D., of Philadelphia.

THERE are constantly occurring a class of cases, without any trace of tubercular deposition in the lungs, which bear so close a resemblance to pulmonary tuberculosis, as to be liable to be confounded with the latter by inexperienced physicians, and which, I have reason to believe, constitute no trifling percentage of the deaths recorded in our bills of mortality as from pulmonary consumption.

The cases to which I refer, and to which I apply the term *spurious consumption*, are marked by progressive and extreme emaciation, cough, expectoration, debility, dulness of spirits, hectic fever, and night-sweats.

Were the term *phthisis* employed in medical nomenclature to indicate nothing more than what is implied by its etymology—that is, simply, consumption, wearing or wasting away, in a general sense, and under whatever circumstances such consumption or wasting away may occur, then the term *phthisis* might with entire propriety be applied to the cases we have designated as spurious, as very correctly expressing one of their most striking characteristics—a consuming, a wasting, a melting, as it were, away of the entire physical organism. It would not then mislead to speak of tubercular and of non-tubercular pulmonary *phthisis*. But as the term pulmonary consumption or pulmonary *phthisis* is invariably employed to designate the first of these forms of disease, I have made choice of *spurious consumption* as a term little liable to be mistaken, to designate *non-tubercular phthisis*.

It is a matter of the first importance that the true character of each consumptive case we are all called upon to treat should be clearly understood, and that as promptly as possible. In many instances, however, this is not very readily accomplished. When chronic inflammation has been going on for a long time in the lungs, there very generally occurs in their texture one or more abscesses, differing in size in different cases. These, when they become emptied of their contents by rupture or other cause, leave cavities, which may continue open for some time, but, sooner or later, their

parietes coalesce, and a kind of cicatrix is formed. At the same time, the substance of the lung is often studded here and there with nodules—for the most part comparatively small in size—of hepatization. Under such circumstances, the physical signs, revealed by auscultation, will frequently fail to throw any light upon the true character of the lesions present; even the most expert stethoscopist will very often fail to arrive at a correct diagnosis. Now, on our ability to distinguish at a sufficiently early period in its course the spurious from the tubercular form of consumption, will, to some extent, depend the life of the patient.

When an individual labouring under *spurious* consumption is placed promptly under proper medical treatment, combined with a well regulated diet and regimen, a fair opportunity is furnished to the patient for a return to entire health. While, on the other hand, when the case is one of tubercular phthisis, although the fatal march of the disease may be retarded and the more prominent symptoms alleviated by the employment of proper means, yet a complete cure, unless it be a spontaneous one, can scarcely be hoped for.

To distinguish spurious from tubercular consumption, the first thing to be taken into account is the lineage of the patient. If on either the paternal or maternal side, or on both, there has prevailed a well-marked strumous diathesis, and a predisposition to the class of diseases to which individuals of that diathesis are liable, we shall have a well-founded reason to infer that the case of consumption, the true character of which is under investigation, is one of tubercular phthisis. Still more so, if at the same time the patient is of a decidedly strumous diathesis—as marked by a delicacy of organization; pale countenance, quickly flushed to a pale rosy tint upon the slightest excitement; light-coloured hair; light blue or grayish eyes, with brilliant whiteness of their adnatæ; very white teeth; great delicacy of skin, showing the subcutaneous veins meandering beneath it; mostly a bulbous condition of the ends of the fingers, with incurvated, sentiform nails; susceptibility to slight degrees of cold, and to the morbid influence of a cold, damp atmosphere, and, finally, to the subacute character that is assumed by any disease with which they may become attacked.

The pathognomonic symptoms of phthisis pulmonalis occurring in an individual answering to the foregoing description, may, with very great certainty, be set down as those of tubercular consumption, more especially when the physical sounds detected in the chest by auscultation are clearly those appertaining to tubercular disease of the lungs.

It is by no means pretended that the characteristics given above are those alone which distinguish the tubercular diathesis, they are only presented as the most unequivocal. The absence of one or several of them, or their lesser prominence, by no means implies the absence of pulmonary tuberculosis, however much it may embarrass our diagnosis.

An examination of the matter expectorated will often aid us in arriving

at a correct diagnosis. In tubercular disease of the lungs, the sputa, in the early stages at least, consist most commonly of a white frothy mucus; later, they become more consistent and glairy, and of a darker hue. They are often intermixed with small whitish particles of a cheese-like appearance—broken-down tubercular matter, and not unfrequently, with distinct masses of a well-defined puriform character.

In what I have denominated *spurious* consumption—consumption without tuberculosis—an individual in the enjoyment apparently of robust health, and without any perceptible predisposition to tubercular disease, will be attacked somewhat suddenly, in most instances after exposure, with acute bronchitis or pneumonia. The disease will, in spite of the best selected and faithfully administered remedial measures, run on in a chronic form for many weeks, or even for months, assuming gradually an assemblage of symptoms, which, even with the aid of the stethoscope, can, in many instances, scarcely be distinguished, at their height, from those pathognomonic of tubercular consumption. It is only from an attentive study of the entire history of the case that any approach to a certain diagnosis can be made.

It is true, that in these spurious cases, the matter expectorated is always more decidedly purulent than it is in tubercular consumption, while it is entirely free from any fragments of tubercular matter. The peculiar whiteness and bright appearance of the adnatæ of the eyes are seldom present, and are never so prominently marked as in the tubercular form of consumption. The same statement may be made, also, in respect to the morbid whiteness of the teeth, the bulbous appearance of the finger ends, and the incurvated, scutiform shape of the nails. In place of the buoyant, hopeful disposition, and the unclouded intellect, so commonly observed in cases of tubercular phthisis, they who labour under the *spurious* form of consumption are, for the most part, dull, gloomy, dispirited, and despondent.

Physicians who have seen much of consumption under the two forms—the *tubercular* and the *spurious*—and have carefully compared the one form with the other, throughout their respective courses, will, in the general run of cases, be able to distinguish with sufficient accuracy the one from the other, where others who had neglected this study would utterly fail; and acting upon the diagnosis thus arrived at, they are enabled to effect, in the majority of cases, an entire cure, by entering at once upon an appropriate treatment, rigidly enforced: provided, always, that the patients have come under their care before the destruction of organization in the lungs, and the exhaustion of vitality throughout the system have proceeded to too great an extent to be remedied.

If I shall succeed in directing the attention of the younger portion of the profession to the fact of the existence of two distinct forms of pulmonary consumption, a tubercular and a non-tubercular, a cure of the first being, in the actual state of medical science, unattainable, while in the

great majority of cases in the second, a cure may be effected, under an appropriate course of treatment opportunely commenced, the two forms of disease, when at their height, bearing so strong a resemblance to each other as to be undistinguishable to the superficial observer: if, finally, it shall be my good fortune to convince the inexperienced members of the profession of the importance of studying, with minuteness and care, the antecedents and characteristics of each of these forms of pulmonary phthisis, and of determining, if any, what conditions and symptoms are peculiar to the one and absent in the other, with the view of their forming a certain basis for a correct diagnosis, and appropriate treatment, my object in the preparation of this article will be fully accomplished. I need only allude to the important bearing this question has in reference to many cases of life insurance.

ART. IX.—*Axillary Aneurism; Ligation of the Left Subclavian Artery; Recovery.* By C. C. F. GAY, M.D., Surgeon to the Buffalo General Hospital.

THE following case is of professional interest from the fact that several surgeons of distinction failed to make a correct diagnosis:—

G. S., aged 26, was wounded six years previously to his entrance into hospital by the accidental discharge of a pistol, the ball entering the front of the left shoulder. Soon thereafter a small tumour was observable in the axilla. The ball could not be extracted.

At the time he entered the hospital for treatment, the tumour had increased in size until it became as large as a child's head, and was located just in front of the axilla upon the walls of the chest. It presented the appearance of a large abscess, pointing and about to burst. It felt soft and fluctuated only at the apex; the remainder of the tumour was hard and unyielding; it could not be compressed.

The most thorough and prolonged stethoscopic examination did not reveal pulsation or thrill. There was no pulsation in the radial artery at the wrist; the arm was partially paralyzed. I introduced the exploring needle through the soft portion of the tumour and obtained a few drops of blood; I afterwards thrust the needle down into the interior of the tumour where no fluid escaped. Then an ordinary trocar was used and carried into the centre of the tumour. A little blood at first escaped, but there was no continued flow, or rather the blood ceased to flow entirely; therefore, the canula was withdrawn. Chloroform was now administered, when I made an incision over the tumour through the integuments, and coming down upon a blue surface, I forbore longer to use the blade of the knife. With the handle I made slight pressure over the point entered by the trocar, when the sac burst and the blood spurted with great force and volume. Whether I did rightly or wrongly, I immediately tore open the sac in the line of my incision, turned out the clot, and thrust my hand up into the axilla, and arrested the hemorrhage at once.

Stimulants were now administered, the subclavian compressed, and the position taken with my hand was assigned to two assistants. I at once cut down and ligated the left subclavian artery. The two wounds were dressed and the patient put to bed.

On the seventh day secondary hemorrhage supervened, but was speedily arrested by the house physician, after which there was a steady and good convalescence; the patient was well in six weeks after the operation; and the paralysis of the arm and forearm gives promise of disappearing, but the pulse at the wrist is still absent.

ART. X.—*Vertebrated Prostatic Catheter.* By T. H. SQUIRE, M.D.,
of Elmira, New York. (With a wood-cut.)

To introduce a catheter for the relief of retention of urine caused by enlargement of the prostate gland has ever been considered a most delicate and troublesome operation. Until quite recently the best teachers and operators in this department were more favourably inclined to the rigid silver than to the gum-elastic instrument. But Sir Henry Thompson, in the last edition of his excellent work *On Diseases of the Prostate*, says: "Once preferring the rigid silver, I now, with a larger experience, have no hesitation in making choice of the gum-elastic catheter." Among subordinate teachers and practitioners, some still prefer one instrument and some the other. It is admitted, however, that to be well equipped for prostatic retention, the surgeon should be provided with both varieties; for the rigid silver catheter may succeed the best in one case, and the gum-elastic in another. But the fullest assortment of both kinds of instruments cannot, with the great majority of the profession, prevent considerable embarrassment and occasional failure in efforts to evacuate the bladder in these troublesome cases. This embarrassment and failure are, in part, due to inexperience and unskilful management on the part of the surgeon, and, in part, to imperfections in the instruments. Owing to the infrequency of these cases in the human family, it is impossible for the great majority of physicians to acquire experience and skill in affording the necessary relief, and, therefore, it is all the more important that the instruments used should be as free from imperfections as possible.

In the consideration of the subject of catheterism, in prostatic retention, one fact occurs, possessed of the utmost significance, namely: *the seat of embarrassment and failure is, always, in the deeper part of the canal, very near to the bladder.* Why is it that the rigid catheter invariably passes easily through the anterior three-fourths of the canal, and so frequently meets with impediment or failure in the posterior or vesical fourth? The reason is this: the anterior part of the urethra, being perfectly flexible, adapts itself to the curve and direction of the instrument, and

there is no resistance, whilst the deeper part of the canal, being rigid and fixed, cannot adapt itself to the form and direction of the catheter, and as soon as the axis of the instrument ceases to be in correspondence with the axis of the urethra, that moment advancement is difficult or impossible. If the discrepancy be considerable, and too much force be used, a perforation of the canal is sure to be the result. The gum-elastic is better than the rigid catheter, for, being somewhat flexible, it has a limited power of adapting itself to the direction of the rigid urethra. But both instruments are faulty in this, that they cannot accommodate themselves to the direction of that part of the canal which is rigid and often tortuous in its course. In this connection the following question arises: If a rigid instrument will go with ease through a perfectly flexible canal, why will not a *perfectly flexible* instrument pass with ease through a rigid canal? Inasmuch as the canal, in the one case, readily conforms to the instrument, the instrument, in the other case, ought readily to conform to the canal. When the correctness of this theory had become firmly established in my mind, I determined to construct an instrument, that, with every other essential requisite for a prostatic catheter, should in its vesical extremity possess this quality of *perfect flexibility*. What, then, are the essential requisites for a prostatic catheter? They are as follows:—

1. It should have a good calibre for the flow of urine.
2. It should have a smooth external surface, that it may glide in the canal without friction or pain.
3. The vesical portion should be perfectly flexible and floating, that the beak may readily follow the curves of the rigid portion of the urethra.
4. It should have linear or longitudinal stability, that the propulsion of the hand at the pavilion may be transmitted without loss to the beak.
5. It should possess transverse stability, that its calibre may be preserved.
6. It should have such strength as to make it secure against accidental breaking in the canal.
7. The flexibility of the vesical portion, perfect in degree, should be limited in extent, that the instrument cannot double on itself in the canal.

In order to secure all these requisites, the instrument should be made of silver or some other hard material, and the flexibility of the vesical portion obtained by means of a series of perfect joints or articulations, giving it a vertebrated appearance.

The following figure represents such an instrument:—



The rigid portion, which may be called the shaft of the instrument, is from eight to nine inches in length, and number ten in size. At its outer extremity it resembles an ordinary silver catheter. The opposite extremity is ovoid in form, and has a central opening reduced to number five in diameter. The latter extremity, or floating part of the catheter, is composed of from twelve to sixteen vertebræ, or joints, including the beak. Each vertebra is one-fourth of an inch in length, and bears some resemblance to a common teacup, having an open mouth surrounded by a thin, smooth, well-rounded lip, and an opposite extremity which is precisely like the ovoid extremity of the shaft. The beak has an open mouth like each of the vertebræ, and in other respects is similar to the beak of an ordinary catheter. The shaft and the various sections of the floating part are held in loose apposition by means of an internal chain and rod—chain in the floating part, and rod in the shaft—the two forming a continuous ligament of connection. The end of the chain is secured within the beak, and the rod terminates with an eye, at the pavilion, and through this eye passes a small screw-bolt, the thumb-piece of which is one of the rings or ears, at this extremity of the instrument. Or the rod may be secured in the following way: The rod can be made to terminate in a right angle with a ball at its end, the latter is then passed through a fine slot very near the end of the tube, and the short arm given a quarter turn and secured by a cap having a bayonet slot in the side, which cap is slipped on the end of the tube. This cap should have a slot in the opposite side to admit the neck of a stationary ball.

The exact length or tension of this internal ligament is a matter of the utmost importance, for upon this depends the essential virtue of the instrument. There is but one degree of tension that is appropriate. If the tension be too great, the flexibility of the floating part is seriously abridged; if it be too slack, the tubal integrity of the instrument is lost. In order to be exactly right, the chain should be as lax as may be, and not allow the ovoid extremity of any vertebra to escape from the mouth of its fellow. In this condition perfect and delicate flexibility is secured, and, at the same time, the integrity of the tube is preserved.

Another feature in the construction of the instrument requires special comment, namely: the precise form of the ovoid extremity of the shaft and of the vertebræ. If the contraction of this extremity be too abrupt, approaching a spheroid form, it is objectionable; and on the other hand, if it be not sufficiently abrupt, if it be too conical, it is equally at fault. The smaller extremity of an ordinary hen's egg supplies an appropriate illustration of the form required.

About one year ago, I had some experimental instruments made, and with the aid of quite a number of professional friends, began to submit the catheter to practical testing in typical cases of prostatic retention, and, although the information thus sought has been slow and difficult of

acquirement, nevertheless, the results, thus far, have been exceedingly gratifying, as the following cases will show :—

CASE I.—Reported by Dr. Caro, of New York. M., æt. 60, corpulent, average weight 300. Temperament sanguine, temperate and healthy. Six months ago he commenced to have difficulty in passing urine. Upon examination, I found he was troubled with prostatic enlargement. I tried a No. 8 elastic catheter, but could not pass it. A common silver catheter of the same size was passed with great difficulty, producing laceration of the prostate, causing considerable hemorrhage, distress, and delay in using any other instrument. I obtained from Messrs. Stohlman & Co. one of your vertebrated catheters No. 8.

After four days I attempted a second catheterism. To my great satisfaction, and with very little difficulty, I succeeded in passing it to the bladder, affording immediate relief to my patient by drawing two quarts of bloody urine. Four days of practice made him acquainted with the manipulation of it, and ever since he has been enabled to relieve himself from the distress of want of free micturition.

CASE II.—Reported by Walter Booth, M.D., of Boonville, New York. Was called four miles to see a man, aged 55, and found him suffering from retention of urine. There was great distension of the bladder and very severe pain. At once attempted to introduce the common silver catheter, but failed to reach the bladder. Returned for the vertebrated instrument, and within one hour was by the side of the patient again. The instrument passed at once and without the least difficulty, and, of course, relieved him of his sufferings. I continued the use of the new instrument five or six days, when the patient was discharged cured.

CASE III.—Reported by J. L. Stewart, M.D., of Erie, Pa. The vertebrated catheter was used with great satisfaction; succeeded in a case where others had failed with the common instrument.

CASE IV.—Reported by Wm. E. Johnson, M.D., of Waverley, New York. Mr. ———, æt. 56. After a long ride on the cars, had retention of urine, severe pain, tenesmus, &c. Employed the silver catheter, which with difficulty was introduced and with very unsatisfactory results; but little urine escaped, and upon the withdrawal of the instrument, as well as during its presence in the canal, blood escaped.

In this dilemma the vertebrated catheter was used, and between two and three pints of urine drawn off with no pain, and very little blood following.

Next day used the catheter three times, and in each instance with ease and satisfaction. Patient then used the instrument himself till the power to urinate returned.

CASE V.—Reported by F. Abbott, M.D., of Elmira, New York. Was called to a patient, aged 60 years, suffering from an attack of prostatic retention of urine. Failing after repeated efforts with the usual gum-elastic and rigid catheters, recourse was had to the vertebrated prostatic catheter, which entered the bladder with perfect ease, and three pints of urine flowed away. Patient afterwards used the instrument himself, till the natural function was restored.

CASE VI.—Reported by J. K. Stanchfield, M.D., of Elmira, New York. Retention of urine in a man 57 years of age. Unable to pass a common silver catheter. The vertebrated catheter, readily, and without pain, entered the bladder as if by its own gravity.

CASE VII.—Reported by William Woodward, M.D., of Big Flats, New York. W. R., farmer, æt. 66; after a long ride, was seized with complete retention of urine. He was speedily relieved by the use of the common silver catheter; but, requiring the operation to be repeated more than twice a day, the neck of the bladder became inflamed, and the introduction of the catheter was attended with pain. On the sixth day of his illness the vertebated catheter was used, and was passed with much less difficulty and pain than attended the use of the common catheter. On the tenth day the patient began to use it himself, and he continued so to do as long as an instrument was required.

CASE VIII.—Reported by H. Lyle Smith, M.D., of Hudson, New York. Patient 76 years of age, with prostatic retention of urine. The common gum-elastic catheter was used without difficulty by the surgeon; but the patient, in attempts to introduce it himself, could not succeed. At length the vertebated catheter was substituted (Sept. 1870), and its introduction was attended with so little pain, that the patient used it himself for a long time with the greatest satisfaction. Death finally occurred from gradual exhaustion. The new catheter was employed as long as any instrument was called for.

CASE IX.—Reported by Dr. Hutchison, of Brooklyn, New York. Dr. H., in January, 1870, was called as counsel to a case of retention of urine from enlarged prostate, and being unable to go, sent his assistant Dr. Wilson. The two physicians who had charge of the case, one a gentleman of large experience, had tried ineffectually for an hour or two to enter the bladder. Dr. W. introduced a No. 7 or 8 catheter, with but little difficulty, and subsequently the patient tried to introduce the catheter, but was unable to do so. He (the patient) did, however, introduce the vertebated catheter with the greatest ease, and continued to do so three times a day as long as it was required.

CASE X.—Reported by Dr. Hutchison, of Brooklyn, New York. Mr. —, æt. 60, had prostatic retention, which the attending physician was unable to relieve by the catheter after two hours' effort. Dr. Wilson then saw the case Jan. 1871, for Dr. Hutchison, and introduced quite readily a No. 8 silver catheter. On the following day Dr. H. saw the patient, and introduced a No. 8 readily, and twenty-four hours later he requested the patient to try the vertebated instrument. The patient was timid and agitated, but passed the catheter to the prostate, where it stopped; the *slightest* push, however, by Dr. H. caused it to enter the bladder. It was subsequently introduced by a son-in-law of the patient without any difficulty.

CASE XI.—Reported by Dr. Caro, of New York. A healthy man, æt. 81, weighing 250, had retention of urine from enlarged prostate gland. Tried a No. 8 silver catheter to relieve him of the accumulated urine in the bladder, and probably, by force, could have passed it, but finding an obstacle at the prostate, and the patient suffering great pain, the instrument was withdrawn, and a No. 8 vertebated catheter was passed without the slightest inconvenience, relieving him of about three pints of brown-colored urine. Afterwards the nurse accomplished the operation regularly, and always with ease and great satisfaction to the patient.

CASE XII.—Reported by Dr. May, of Corning, New York. Young man suffering from distended bladder, with inflammation of the bowels.

Attempted to relieve the retention with No. 9 silver catheter, also with No. 6; but did not succeed with either. With the vertebrated instrument, No. 10, had not the least difficulty in reaching the bladder. Nearly two quarts of acrid urine were drawn, to the great relief of the patient. The instrument was used once afterwards, and then the natural function was restored.

CASE XIII.—Reported by Dr. May, of Corning, New York. Having occasion to tap a man for ascites, and desiring, as a precautionary measure, first to evacuate the bladder, the vertebrated prostatic catheter was used, which reached water with the greatest facility, inflicting no pain whatever upon the patient.

CASE XIV.—Reported by Dr. Bates, of New Lebanon, New York. A mechanic fell from a building, was badly injured, kidneys wounded, and bladder filled with urine and blood. Tried the ordinary catheters, but could not get into the bladder. Then tried the vertebrated instrument with perfect success. Had to use it many times. Patient recovered. Attributed the life of the patient to the use of this catheter.

CASE XV.—Reported by Dr. Smith, of Hornby, New York. Was called to N—— O——, of Orange, N. Y., May 5th, at 4 o'clock P.M., who was suffering from retention of urine of twenty-two hours' standing. Had suffered much pain for nineteen hours. The case was so evident, and pain so severe, I concluded to lose no time with fomentations, &c. Passed a gum-elastic catheter, No. 8, deep into the urethra, but met with resistance near the prostate. The instrument would invariably turn to the right, showing the channel to be tortuous and uneven. Carried my index finger in the rectum, and found prostate gland very much enlarged, heat of parts much above natural standard, and a good deal of soreness. I pronounced the case acute prostatitis with hypertrophy. By retaining my finger against the membranous portion of the urethra, or nearest portion of prostate gland, I succeeded with much difficulty in reaching the bladder, and drawing off about twenty-four ounces of high-coloured urine, which of course relieved the patient; gave opium.

May 6th. Called at M., and found the patient suffering from retention as on the day previous, but not so severely. Introduced catheter, but with a little less trouble, and drew sixteen ounces of urine.

7th. Was called very early in the morning with message that patient was suffering very much. I saw him at 7 o'clock A.M., and attempted to introduce catheter as before, but failed; heat in the rectum intense. Gave an opiate, and sent for an experienced and skilful physician from Monterey, who reached the patient at 10½ A.M. He made a persevering effort to introduce various instruments, but failed to reach the bladder. Ordered nauseating medicines, morphia, hip-bath, &c. At 2 o'clock P.M., I succeeded in reaching the bladder with a No. 8 silver catheter, with a long, deep-sweeping curve, and drew 1½ pint of urine.

8th, 9th, 10th, and 11th. I introduced gum-elastic catheter with much difficulty, generally without the stilet. Could pass the gum catheter with less difficulty than the silver; although the silver instrument was a remarkably good one for the occasion, as it was long and deeply curved. The patient, at every attempt to pass the catheter, became very much exhausted, and I could see he bore each successive operation with more difficulty, as he grew more and more exhausted, his strength constantly failing.

12th. Called on Dr. May, of Corning, and through his kindness obtained

a vertebated silver catheter. On exploring the urethra, found the same zigzag course of the canal. Could with some difficulty reach the prostatic portion, but then came the obstruction as before, and, as it worried my patient so much, I threw the old instruments all aside and attempted the introduction of the new catheter. It being about three sizes larger than those I had before used, I used but little force, giving the passage sufficient time to dilate, but, in less than one-half the time required before, I had the satisfaction of reaching the bladder, followed by a copious flow of urine. Here was success I had hardly dared to expect. At every attempt to introduce the other instruments more or less blood was sure to flow. But in introducing this new instrument no hemorrhage whatever followed. The patient was extravagant in delight. In no case afterwards could I induce him to let me pass any other instrument. I introduced this twice a day, for three or four weeks. Since that time to the present date, he has been able to pass urine with more or less difficulty without the aid of any instrument whatever.

Occasionally when using the catheter I could detect small calculous deposits. Since he has been able to void urine naturally, more or less gravel has escaped with the water.

CASE XVI.—Reported by Dr. Gere, of Chemung, New York. G. C., æt. 70. In the month of March he was taken with complete retention of urine. A physician was called, and the common catheter was used with considerable difficulty and pain. The vertebated catheter was afterwards tried, which proved so easy of introduction that the patient himself has since used it regularly, and is still obliged to use it twice daily. The prostate gland is enormously enlarged, almost entirely filling the pelvic cavity, and seriously obstructing the passages from the bowels.

CASE XVII.—Reported by Dr. Purdy, of Elmira, New York. Was called in counsel to see Mr. E., æt. 70; found him in a state of extreme suffering from prostatic retention. Having the vertebated catheter with me it was used at once, with the utmost facility and freedom from pain. A relation of the patient afterwards used the instrument, till the man was able to urinate.

The testimony of these cases confirms the correctness of the theory or principle embodied in this new catheter. It settles the question that, in the introduction of a catheter for the relief of prostatic retention, the *urethral walls*, and not the surgeon, should guide the beak of the instrument. I do not hesitate, therefore, in pronouncing this new catheter a *real and very important improvement* in the art of modern surgery.

My very grateful acknowledgments are due to those members of the profession who have kindly assisted me in testing the practical merits of this new catheter.

The vertebated prostatic catheter may be obtained from J. H. Gemrig, No. 109 South Eighth Street, Philadelphia.

ART. XI.—*Strangulated Femoral Hernia. Operation: Recovery.* By F. A. BURRALL, M.D., Fellow of the New York Academy of Medicine, Surgeon to the New York Northern Dispensary.

SOME months ago I was called to see Mrs. —, of New Jersey, aged 70, and a widow, who was on a visit to a daughter in New York City. Seven years previously she had had an attack of nausea and vomiting, and noticed at that time a small tumour in the right groin. This she pushed back, and had since done so repeatedly, when it reappeared. She had never worn a truss. She had suffered from constipation.

Two nights before I saw her she was attacked first with a pain in the hypogastrium, then nausea and vomiting; the pain on other similar occasions had been also in her back. During the night of the present attack the tumour again appeared, and was at first supposed to be an enlarged gland. An injection was given which was returned.

When I saw her I found her calm and with little constitutional excitement. There was occasional vomiting of a coffee-coloured fluid. The tumour was about the size of a large marble, elastic, and below the right Poupart's ligament. Ineffectual taxis, both while the patient was on her back, and also on her hands and knees, was employed. I then advised an operation; but the consent of friends could not be obtained until other members of the family had been consulted; and this caused a delay of several hours. At 6 P.M., assisted by Dr. W. R. Whitehead, the patient was etherized and placed crosswise at the edge of the bed. I pinched up the skin and transfixed it vertically just within the median line of the tumour, then enlarged the wound and continued the dissection, opening the sac. A constriction existed at what seemed to be the falciform edge, which was divided with a probe-pointed bistoury. There was no constriction at Gimbernat's ligament, but the neck of the sac was adherent at the ring by adhesions which were broken with the finger, and the intestine was brought down, still strangulated. The strangulation was caused by delicate fibrous rings running transversely round the neck of the sac. These were carefully divided, and the intestine, which was bluish, but in a tolerable condition, slipped back into the abdominal cavity with a gurgle.

A sponge, dipped in a solution of carbolic acid, of the strength of about a drachm to a pint, was stuffed for a moment into the wound; the adjacent skin was washed with the same solution, then the wound was closed with silver sutures and adhesive straps, over which was a piece of lint wrung out from the carbolic acid solution and a compress and spica bandage. Ordered R. Morphiae sulphat. gr. ij, spts. nit. dulcis ℥ss, aquæ ℥jss. M. S. 5j p. r. n.; not oftener than once in two hours. At 10 P.M. the pulse was 96, and the patient was quite comfortable.

During the night there was a watery, brownish passage from the bowels. In the morning the pulse was about 90; expression of face good; the abdomen slightly tympanitic and puffed upon the right side. It was ordered to give the mixture in sufficient doses to keep up slight narcotism.

The case progressed favourably, with the exception of burrowing of pus in the external cellular tissue near the wound, and a red, painful spot just outside the patella, which I thought due to a connection by the lymphatics with the pus near the wound. The purulent tract was washed out with a solution of carbolic acid; after which the wound closed gradually, and the

redness disappeared. The pulse did not rise to 100. Milk-punch and beef tea with quinia were given at the commencement of the after-treatment, and continued throughout.

The patient made a sound recovery. She has found it necessary or advisable to wear a truss since her return to her usual duties.

This case will, I trust, add something to the lists of those physicians who may be making notes or statistics of hernia.

ART. XII.—*Description of an Anomalous Origin of the Right Subclavian Artery, associated with Anomalies of Origin of the Branches of both Subclavian Arteries; with Remarks.* By J. EWING MEARS, M.D., Prof. of Anatomy and Surgery in the Pennsylvania College of Dental Surgery; Secretary of the Pathological Society of Philadelphia, etc.

THE specimen represented in the annexed drawing was prepared by me some years since—having come under my observation whilst engaged in dissecting in the Jefferson Medical College anatomical rooms. Owing to the fact that the subject, in which it occurred, was dissected in parts, in common with other students, it was impossible, at the time at which the anomalies were discovered, to trace, with that accuracy which is so essential in all anatomical descriptions, the distribution of the vessels arising by anomalous points of origin from the subclavian arteries, or to determine the relations of the surrounding structures. It is believed, however, that the vessels can be designated with sufficient exactness to warrant a description of the specimen, by means of which it will be placed on record, with such other specimens of this character as have been already described.

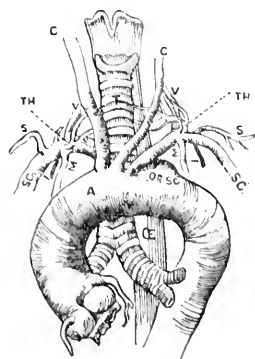
The specimen presents, as will be recognized by reference to the figure, the following peculiarities:—

1. Abnormal origin of the right subclavian artery.

2. As a necessary consequence of the first, an anomalous origin of the right primitive carotid artery.

3. Irregularity in the points of origin of the left primitive carotid, and left subclavian arteries.

4. Deviations from what is regarded as the normal plan of origin in the branches of the subclavian arteries.



The second and third conditions are incidental, and do not concern particularly the present investigation. The first and fourth are important, and may be described as follows :—

1. *Origin and Course of the Right Subclavian Artery.*—In this specimen, the artery takes its origin from the superior and posterior aspect of the aorta on the left side, at a point corresponding to the junction of the transverse, with the descending, portion of the arch, and one inch from the point of origin of the left subclavian artery. From this origin, it takes its course backwards and obliquely upwards, passes between the œsophagus and vertebral column, traversing portions of the second and first dorsal vertebræ, and reaches its normal position on the upper and outer surface of the first rib.

2. *Origin of the Right Primitive Carotid Artery.*—This vessel occupies the place of the innominate artery, arising from its point of origin, from the commencement of the transverse portion of the aortic arch.

3. *Positions of Origin of the Left Primitive Carotid and Left Subclavian Arteries.*—The origin of the former is in close connection with that of the right carotid artery, and in this respect occupies a position more to the right than is normal ; in crossing to its distribution on the left side of the neck, it covers a larger surface of the trachea than is natural.

The left subclavian artery arises from the summit of the arch of the aorta—the middle point of the transverse portion of the arch, which is the normal point of origin of the left primitive carotid artery, deviating from its normal origin at the end of the transverse portion of the arch.

4. In the *Branches of the Subclavian Arteries*, the deviations from the normal plan of origin are as follows : In both vessels the thyroid axis is absent—the branches originate as follows :—

1. The *Inferior Thyroid Artery* on the right side arises independently from the first part of subclavian artery at a point on the anterior surface and near to the *inferior* border.

On the left side, it arises independently from the anterior surface near the *superior* border from the first part of the subclavian artery.

2. The *Vertebral Artery* is smaller on the right side than on the left, and arises from the *superior* surface of the subclavian artery. On the left side, from the *superior* and *posterior* surface of the artery. On each side, it is given off normally from the first part of the subclavian artery.

3. The *Internal Mammary Artery*, on each side, takes origin from the anterior surface ; on the right, the point of origin is nearer to the inferior border, and in close connection with the points of origin of the *Inferior Thyroid* ; on the left side, the distance between the two points of origin is greater.

4. The *Superior Intercostal Artery*, on the right side, originates from the upper and back part of the first portion of the subclavian artery to the inner side of the scalenus anticus muscle. The *Left Superior Inter-*

costal Artery arises from the posterior surface of the subclavian artery, near to the *inferior* border.

5. The *Transverse Cervical* and *Suprascapular Arteries* arise by a common trunk from the subclavian artery, at a point corresponding to the junction of the second and third portions of the artery, just external to the scalenus anticus muscle. On the right side, the origin is from the upper surface; on the left side it is placed a little posterior.

6. In addition to the above described branches, a small supernumerary artery arises on the right side—a muscular branch.

Remarks.—The form of anomaly occurring in the origin of the right subclavian artery, as above described, has been so frequently observed and described as to divest this specimen of particular interest in this respect. In a very careful examination of a large number of authorities, I have not been able to find the description of a specimen illustrating this variety of anomaly, in which an association of anomalies in the origin of the branches of the subclavian arteries has been observed. The association of these anomalies of origin gives to the specimen, therefore, an interest which it otherwise would not possess, and will justify a more extended notice of it.

In examining the literature of this subject, my attention has been directed to some points in connection with the anomalies of this form which may be of interest to note. First, as to *frequency of occurrence*. Professor Joseph Leidy, of the University of Pennsylvania, informs me that the Wister and Horner Museum contains, among its arterial preparations, at least three examples of this anomaly. In his dissections he has met with two instances. In all the examples which have fallen under his observation, the artery has passed behind the œsophagus. Dr. Wm. H. Pancoast, Demonstrator of Anatomy in the Jefferson Medical College, informs me that he has observed examples of this anomaly. Other instances may have been observed in the anatomical rooms, but, as far as I know, they have not been reported. Wood (*Trans. London Path. Society*, vol. x.), and other anatomists, state generally, that almost every museum contains a specimen showing this irregularity. Colles (*Surgical Anatomy*) states that he observed four instances in one winter's dissections—two in adults, and two in children. Quain (*Anatomy of the Arteries*) reports four instances as observed in the dissection of one thousand subjects, giving a proportion of one in about two hundred and fifty. J. M. Dubrueil (*Des Anomalies Artérielles*) states that it is remarkable "that among the inversions of the origin of the right subclavian artery, the most extraordinary in appearance is the most common; that in which the artery arises from the extreme left of the arch of the aorta, and reaches its normal position on the right side by passing behind the œsophagus." He reports two instances in which this occurred—one especially noteworthy, in view of the fact that the *two primitive carotid arteries* accompanied the right subclavian artery in its abnormal course. It is thus described: "la sous-

clavière droite, située en arrière et à gauche de sa congénère, et dirigée de bas en haut, passait *derrière* l'œsophage *avec les carotides primitives*." Authorities generally agree as to the frequency with which the right subclavian artery arises from the left side.

In reference to the *point of origin* of the right subclavian artery in these cases, there appears to be some variation. Wood alludes to the "singular constancy" of the abnormal point of origin of the right subclavian artery from the descending aorta, as noticed by Quain. Often it coincides with the very point of attachment of the ductus arteriosus. Messrs. Bankart, Pye-Smith, and Phillips (*Guy's Hospital Reports*, vol. xiv.) report two cases in which the artery arose from the "back of the third part of the aortic arch." Meckel (*Descriptive and Pathological Anatomy*) speaks of the right subclavian artery being the extreme left trunk of those which arise from the *arch of the aorta*, and passing to the right side behind the œsophagus.

Hyrtl (*Lehrbuch der Anatomie des Menschen*) vaguely describes the vessel as arising, in these instances, "below the left subclavian artery."

Cruveilhier (*Traité d'Anatomie Descriptive*) gives a similar description.

Harrison (*Surgical Anatomy of the Arteries*, p. 19) says that he has frequently found the artery arising distinctly from the descending portion of the aortic arch.

Quain, in opposition to the statement of Wood, as above quoted, declares that "the position which the artery under consideration (right subclavian) occupies on the aorta, when it springs on the left side, beyond all the other branches, is not constant. Thus, in some cases, it is seen to take rise from the upper part of the arch; in others, it is derived from the posterior aspect of the arch; lastly, the origin may be found much lower down, even from the descending aorta." In regard to the last, he states that it probably "stands alone in respect to the depth at which the subclavian artery arises." Reference is made to anatomical plates containing drawings of specimens in which the different positions of origin are shown.

In the specimen under consideration, the point of origin is from the junction of the transverse with the descending portion of the arch. The weight of evidence seems to be in favour of the descending or third part of the aortic arch as the most frequent position of origin.

The *direction* which the artery takes is generally *oblique*, the obliquity varying in accordance with the position of origin of the vessel.

The *course* of the artery, in its passage from the abnormal point of origin to its position on the right side, is a question of much interest, relating to the constancy with which it passes behind the œsophagus, and to certain conditions which are described as attending its passage between the trachea and œsophagus. The latter will be referred to in another part of this article. Among the authorities consulted by me, Meckel, Cruveilhier, and Dubreuil alone speak of the passage of the artery in *front* of the trachea,

and behind the other trunks given off from the arch of the aorta. The former says that it *rarely* passes in this course; the latter says that it *may* pass in front of the trachea. Neither alludes to cases in which this course was observed.

In reference to the passage of the artery between the trachea and the œsophagus, authorities agree that this variety is of extremely rare occurrence. Quain so speaks of it, and says further, that "it is often mentioned in treatises of anatomy; generally, however, without reference to particular cases." He refers to cases which are reported to have fallen under the observation of Meckel, Monro, and Zagorsky, and states, as his opinion, that "it does not, in either case, appear clearly, from the written description or the figure, what the position of the vessel was with reference to the œsophagus." I have been able to collect three authenticated examples of this form of the anomaly. In one of the cases described by Messrs. Bankart, Pye-Smith, and Phillips (*Guy's Hospital Reports*, vol. xiv.), the artery took this unusual course. Dr. S. W. Gross informs me that an example of this kind came under his observation in the Jefferson Medical College dissecting-rooms during the past winter.

Dr. Bayford (*Memoirs of the Medical Society of London*, vol. ii. p. 275; 1793) gives the history of a case in which the artery was found to pass in this manner to the right side. Dubreuil quotes a case from Desault, *Journal of Surgery*, Paris, 1791, which he states was described in the *Memoirs of the Medical Society of London*, by Dr. Brewer. He remarks that the description was "very incomplete;" and it is questionable whether this is not a reference to Dr. Bayford's case above alluded to. On examination, I cannot find this case in the *Transactions of the Medical Society of London*.

Relation of the Right Inferior Laryngeal Nerve.—In all of these instances of anomalous origin of the right subclavian artery, the right inferior laryngeal nerve does not wind round it in proceeding to its distribution. A glance at the deep position of the artery will explain the cause of this. In its normal position, the artery is on a plane *anterior* to that of the larynx, and the pneumogastric nerve passes down in front, in close relation with the vessel. Just at the point of crossing, the inferior laryngeal branch is given off, and, in order to reach the larynx *behind*, winds around the artery and ascends obliquely to the side of the trachea. When the artery passes *behind* the œsophagus, or *between* the trachea and œsophagus, it is placed deep behind the pneumogastric nerve, and on a plane *posterior* to the larynx; the inferior laryngeal branch, therefore, although given off at the normal point of origin, goes directly to its distribution.

G. W. Stedman (*Edinburgh Medical and Surgical Journal*, vol. xix., Oct. 1823) relates a case of "singular distribution of some of the nerves and arteries in the neck and the top of the thorax." The right subclavian

came off from left side of the arch of the aorta. He states that he could not find the recurrent laryngeal nerve, and thinks that it was absent, its duty being performed by branches given off from the trunk of the pneumogastric.

John Hart (*Ibid.*, April, 1826) describes "a case of irregular origin and course of the right subclavian artery, and right inferior laryngeal nerve." The artery originated as in the case above, and the "nervus vagus of right side crossed the subclavian artery without giving off recurrent nerve in usual manner." "The office of this nerve was, however, performed by several branches arising from inner side of trunk of nervus vagus; the highest and largest became by its distribution the inferior laryngeal nerve." He explains the failure of the inferior laryngeal nerve to wind round the subclavian artery in these cases, by referring to the earlier periods of the existence of the foetus, when the larynx is placed behind the ascending portion of the arch of the aorta, whilst the brain rests on the thymus gland and in front of the ascending portion of the aortic arch. The inferior laryngeal nerves pass back to the larynx, the left going through the arch of the aorta, and the right below the arteria innominata. As gestation advances, the neck lengthens, and the brain is removed upwards, in accommodation to which the nerves become elongated, suspending the arch of the aorta and the right subclavian artery in loops. When the right subclavian arises on the left side, it passes behind the larynx, and is, therefore, not embraced by the inferior laryngeal nerve.

The absence of the right inferior laryngeal nerve is not mentioned as usually occurring in these examples. In the specimen under consideration no abnormal condition of the nerve was observed.

Compression of the œsophagus by the artery, producing a condition of *dysphagia*, has been observed. The only well-authenticated case on record, in which this condition existed, associated with an abnormal origin of the artery, is that of Dr. Bayford (*op. cit.*):—

"The patient, a female aged about sixty-two, had been subject to difficulty of swallowing from the earliest age. The difficulty increased at the period of puberty, and became periodically aggravated; exercise, or any cause tending to accelerate the circulation, increased the distress; abstraction of blood afforded relief. The pain and the seat of the obstruction was referred to the upper part of the sternum. She finally died, exhausted by fatigue and famine. On making an examination after death, nothing could be found to account for the condition, except the position of the artery between the trachea and œsophagus, and from the obvious connection between the state of the circulation and the symptoms, it was reasonably concluded that the vessel was the source of these."

Dr. Bayford gave the name of "*dysphagia lusoria*" to the disease, which he was the first to describe, in accordance with the general belief that all departures from the usual arrangements of organs were examples of a "*lusus naturæ*." Quain thinks that this condition exists only in those

cases in which the artery passes between the trachea and œsophagus. Other cases of dysphagia are recorded, in which the artery was found to pass behind the œsophagus. Careful examination of the reports, however, shows that the symptoms were not such as to warrant the conclusions drawn.

In the great majority of the cases in which the artery was found to pass behind the œsophagus, no history of dysphagia was given. Professor Otto (*Seltene Beobachtungen*, Th. 1., s. 100) reports a case in which he had an opportunity to observe a patient for more than one month, in whom this position of the artery was found, after death, to exist; there was no dysphagia whatever. As far as I can ascertain, no explanation is offered to account for the occurrence of dysphagia in the one case and not in the other. A careful examination of the normal position and relations of the œsophagus, and of the abnormal position and relations it assumes under the influence of the abnormal origin and course of the artery, induces me to submit the following explanation. The œsophagus, at its commencement in the neck, lies immediately *behind* the trachea. As it enters the thorax, it is directed to the left of the median line, emerging from its position immediately *behind* the trachea, and passes across the *left side* of the transverse part of the aortic arch, descending in the posterior mediastinum on its way to terminate at the cardiac orifice of the stomach. Between the transverse part of the aortic arch, which rests in *front* of the trachea and the œsophagus, there exists a space equal in distance to the depth of the trachea. When the right subclavian artery takes origin from the extreme end of the transverse portion of the arch, or from the junction of the transverse with the descending portion of the arch, or again, from the descending portion itself, it forms the outer lateral boundary of a triangular space of which the transverse portion of the arch in front, and the trachea on the side, form the other boundaries. In the specimen under consideration, the antero-posterior diameter of this space is fully one inch; the transverse diameter is three-quarters of an inch, affording therefore a space in which the tube rests without being subjected to any constricting pressure. The artery in passing behind the tube forces it forward into this space, and the distension caused by a morsel of food is in this direction, where ample room exists.

When, on the contrary, the artery takes the more unusual course between the trachea and œsophagus, the latter is compressed against the unyielding vertebral column behind, and in front the artery has the rigid tracheal tube upon which it can exert no force.

During inaction of the œsophagus, the artery has sufficient space, and no interruption is offered to the circulation. Upon the introduction of food into the œsophagus, the bolus meets with a constriction at this point, which it is, however, able to overcome, but at the expense of forcing the artery against the trachea, and making such pressure upon it as will mate-

rially interfere with the blood-current. This sudden interruption of the circulation in a large artery, so near to the great column of blood in the aorta, must cause serious disturbance in the circulating mass, and induce that condition of feeling so graphically described by Dr. Bayford's patient as the near approach of the "agony of death."

It will be observed that the usual symptoms attending stricture of the œsophagus, such as regurgitation of food, etc., are absent, only those being present which relate to disturbance of circulation, and through this the evil effect is produced.

This explanation, it appears to me, is in strict conformity with the anatomical relations of the parts, and, if any other has been suggested, this may be worthy of being considered in connection with it.

While the œsophagus has such ample latitude in the space above described, I can still conceive that an accident, such as Mr. Kirby records in the second volume of the *Dublin Hospital Reports*, may occur. In this case, a bone, which had been swallowed, was stopped opposite to the point at which the artery crossed behind the œsophagus, perforated the tube, and wounded the artery, causing fatal hemorrhage.

Surgical Anatomy.—In discussing this form of anomaly, writers have very properly directed attention to the relations of the artery in the first part of its course, that is, before it reaches the inner border of the scalenus anticus muscle. Sometimes it is necessary to apply a ligature on this part, and it should be borne in mind, that, in these instances, the vessel lies *behind* the right primitive carotid and very deep, separated by fascia and adipose tissue. The *Lancet* for 1839 contains the report of a case in which Mr. Liston performed ligation of the right subclavian artery in the first part, for aneurism. He experienced great difficulty in finding the artery, which was placed behind the carotid to the distance of full one-half an inch, and was separated from it by fascia and adipose tissue. Quain, who was present, thought, from the depth of the result, that it was an instance of this kind. No post-mortem examination was reported to have been made by means of which the exact condition could be determined.

I have been interested in observing that the great proportion of examples of this anomaly have occurred in females. Over two-thirds of the cases, in which the sex was given, were observed in females.

Left-handedness.—Hyrſl states that Prof. Oehl, of Pavia, found, in two cases of this kind, that the individual was left-handed, and he gives, as a possible explanation of this condition, the fact, that, owing to the transposition of the origin of the vessel, a feebleness of circulation is given to the right extremity. The question is interesting and worthy to be noted.

Branches of the Subclavian Arteries.—Absence of the thyroid axis is noted to occur quite frequently. In the majority of instances, the branches of the thyroid axis arise independently from the first portion of the subclavian artery, less frequently from the second and third portion. In a

number of instances, the supra-seapular and transverse cervical are recorded as taking origin by a common trunk, as in this specimen. This latter deviation is to be remembered as important in surgical operations performed upon the third portion of the subclavian artery.

ART. XIII.—*Cases of Ovariectomy.* By WASHINGTON L. ATLEE, M.D., of Philadelphia. (Reported by J. EWING MEARS, M.D., of Phila.)

CASE 223. *Multilocular Ovarian Tumour; Pelvic Adhesions: Incision three inches long; Artificial Anus following the Operation, which gradually closed: Recovery.*—Mrs. M. T., æt. forty-six, widow, native of Ireland, consulted Dr. Atlee, June 24, 1870, in regard to an abdominal tumour. Menstruation commenced at the age of fifteen, previously to which she was very sick. She has always been regular. At the age of twenty-three years she was married, and has had seven children, the youngest being thirteen years old. Menses returned in five or six weeks after parturition.

The patient first noticed an enlargement of the abdomen five years ago, more marked on the left side; it gradually increased in size, and she is now much larger than a woman at full period of utero-gestation. There is distinct fluctuation throughout the tumour, and all the symptoms of a unilocular cyst are present. The os uteri is thrown back, and its lips are ragged; the sound enters only one inch.

Operation July 2, 1870.—Present, Drs. Drysdale, Reese, Mears, W. Lemuel Atlee, Laws, Myers, and Hoffman. An incision two inches in length was made in the linea alba, down to the tumour, and thirty pints of dark, chocolate-coloured fluid, heavily charged with cholesterine, were evacuated by Mears' trocar. Several small cysts were found to occupy the posterior wall of the tumour, requiring the incision to be increased to three inches in order to permit its extraction. The entire lower portion of the tumour was extensively and firmly attached in the recto-vaginal cul-de-sac, and, in order to liberate it, it was necessary to dissect off the peritoneal covering. The right Fallopian tube ran over the surface of the cyst, and its fimbriated extremity was firmly adherent to the upper portion. The pedicle was thick, very vascular, and was, with the divided Fallopian tube, embraced in the three-fourth inch space of Dr. Atlee's clamp. The detached portion of peritoneum, containing some small bleeding vessels, was ligated, the ligature being thrown around it, and secured close to the floor of the cul-de-sac; the redundant portion was removed, and the stump, with the pedicle, placed between the edges of the incision, which was closed by the wire sutures. The tumour involved the left ovary, and consisted of one large cyst, with two or three small cysts developed in its posterior wall. Owing to the attachment of the right Fallopian tube to the cyst, it was thought that both ovaries were involved. On examination, the right ovary was found occupying its normal position; it was atrophied, quite flat, and elongated to the extent of three inches. The uterus was slightly hypertrophied.

The patient, in spite of bad accommodations and bad nursing, recovered

well. When the ligature came away from the stump of peritoneum, an artificial anus was found to exist, through which fecal matter was discharged; the discharge gradually diminished, and in a few weeks entirely ceased; the opening closing spontaneously. During its existence, the bowels acted regularly.

CASE 224. Multilocular Ovarian Tumour; Extensive Adhesions, including Intestinal and Omental; Incision seven inches in length; Death, from Peritonitis, on the sixth day.—Mrs. M. C. W., of Virginia, æt. forty, widow, consulted Dr. Atlee, June 24, 1870. She was an inmate of the St. Joseph's Hospital, of this city, having entered this institution for the purpose of receiving care and attention under his treatment. Menstruation commenced in her twelfth year, was suspended for one year, and then became regular. She married at the age of seventeen, and has had one child, now twenty-two years old. She has had several miscarriages, the last in 1860. In March, 1869, she had flooding, at which time the menses ceased. In this month, the tumour made its appearance, and has rapidly increased in size. Two months after, she had an attack of inflammation in the right side of abdomen, with high fever, lasting two weeks. Examination shows the abdomen to be very much enlarged—the whole left side filled up with a dense multilocular mass. In the central portion, and on the right side, the cysts are larger and fluctuation is distinct. The uterus is pushed forwards and above the pubes, and is fixed in position; the sound enters three and a half inches; a hard mass fills up the pelvic cavity, and is immovable. The lower portion of abdomen, the vulva and the lower extremities, are very œdematous.

June 25, 1870. The patient was tapped, evacuating twenty pints of dark, olive-coloured, opaque, gelatinous fluid; after the tapping the whole right side of the abdomen subsided, while the left side remained elevated. The right hypochondrium and epigastrium also remained protuberant, being occupied by a hard mass. The tumour in the pelvis was not affected by the tapping.

July 5. Ovariectomy was performed in the presence of Drs. Burpee, Mears, Reese, Boker, Baldwin, Rex, and others. An incision, four inches in length, was made through the thick œdematous abdominal wall down to the tumour, and the large cyst on the right side evacuated by Mears' trocar. The incision was increased to seven inches in length, and the hand introduced in order to separate the adhesions which existed between the abdominal wall and the tumour; these were quite vascular and bled very freely; those on right side were the strongest. In order to reduce the size of the dense multilocular mass on the left side, it was punctured by the large trocar—no fluid escaped, and its size was not affected by this procedure. It was then incised, and the contents broken up and removed by the hand. This permitted the tumour to be removed through the incision in the abdominal wall. The omentum was extensively attached to the upper surface of the tumour; this was stripped off and given into the hands of an assistant. A portion of intestine was found adherent to the lower left surface of the tumour; this was detached by dissecting off the outer covering of the tumour. The pedicle was very short, not over an inch in length, and five or six inches in width, consisting of the broad ligament; it was surrounded by a ligature to reduce its size and clamped, and the tumour removed. The omentum containing the bleeding vessels was ligated, and the stump placed between the edges of the incision; the intestinal adhe-

sions were ligated, the knot cut close, and the ligated portion returned to the cavity of the abdomen. The abdominal and pelvic cavities were cleansed, and the incision closed by seven wire sutures. About ten ounces of blood were lost. Weight of tumour and fluid estimated at sixty pounds—it involved the left ovary.

The patient, after suffering from great gastric irritability, prostration, and symptoms of peritonitis, died on the morning of July 10.

The following several reports were made in this case by J. Ewing Mears, M.D. :—

Ovarian fluid, colour dark brown; specific gravity, 1035. Contains about seventy-five per cent. of albumen.

Microscopic examination shows granule cells not very numerous, of varying sizes, loaded with oil-globules; free oil-globules and free granules in considerable quantity; large-sized plates of cholesterine, epithelium scales, and a few blood-corpuscles.

Cell proliferation not very active; fatty degeneration quite active.

The *tumour* weighed twelve pounds, after evacuation of the large cyst and partial destruction of one of the large secondary cysts.

It consisted of one large cyst, into which projected on the right side one large secondary cyst, and on the left side two of the same character.

On incising the lining membrane of the large cyst, the secondary masses were found to be composed of tertiary cysts, firmly packed together. These cysts varied in size, and in the character of their contents. In some, the contents were solid, composed of a firm, granular, cheesy matter. Others contained a semi-solid substance, resembling thick pus in appearance. Again, others contained fluids of various colours and consistencies, possessing the usual appearances of ovarian fluids.

Examination by the microscope showed that the contents of the various cysts, although differing so greatly in physical properties, were identical in character and composition; consisting of granule cells, shrivelled oval epithelial cells, oil-globules in great abundance, blood-corpuscles, and granular debris.

The contents, having the appearance of pus, were subjected to microscopic examination and chemical tests, and found to be the same as the contents of the other cysts—entirely free from the presence of pus-corpuscles.

It is possible that the solid contents of some of the cysts existed in a fluid condition during life, and became solid after death, owing to the reduced temperature then occurring. In the tenth volume of the *Transactions of the London Pathological Society*, two specimens of ovarian tumour are described, in which this change is supposed to have occurred, as it was shown that the solid constituents found in each specimen became fluid when subjected to a temperature equal to that of the body during life.

Report of post-mortem examination, July 10.—Rigor mortis not well marked; abdomen not very tense; edges of the incision united, except at the lower angle immediately about the pedicle. On opening the abdominal cavity, the intestines were found adherent to the parietes of the abdomen, more particularly on the right side, where adhesions had existed between the surface of the tumour and the wall of the abdomen. Separating these adhesions, the parietal surface was found covered with blood-clots, and at one point a small abscess had formed. The visceral and parietal surfaces of the peritoneum were inflamed. The pelvic cavity contained a quantity of sero-sanguinolent fluid.

The abscess had formed on the parietal surface of the peritoneum, and

was not connected with the intestines. The pedicle had been divided at the junction of the left broad ligament with the uterus, leaving an extremely short attachment. No change was noted at the point where the ligature had been cut off close and left attached to the vessel in the mesocolon.

The above case must be placed in the second class of cases.

CASE 225. Unilocular Ovarian Tumour; Extensive Adhesions, Parietal and Omental; Incision five inches in length; Disease supposed to be Malignant; Death on the fifth day from Septicæmia.—July 20th, 1870, Dr. Atlee examined at New Marlborough, Massachusetts, Mrs. R., æt. 51. She gave the following history: Menstruation commenced at the age of sixteen, and continued regular. She married at the age of eighteen, and has had five children, the youngest being twenty-two years old. At the age of forty-five she passed her climacteric period quietly, but six months after the menses returned, and have appeared occasionally since, up to the present time, upon over-exertion. Seven or eight years ago she noticed a tumour in the right groin; it grew to the size of her fist, and seemed to have disappeared in the course of two years. In September, 1868, a swelling appeared in the same place, and gradually increased to the present size. In the early period of the growth of the tumour it was freely movable, and rolled about as she changed position. Last spring it apparently stopped growing, but on using electricity it seemed to be quickened and its growth has been more rapid. During the past three weeks the lower extremities have become œdematous, the right more than the left.

The patient is much larger than a woman at full period of utero-gestation. The abdomen is quite uniform in shape, elastic, free from nodules and ridges, and resonant only over the left lumbar region. The sense of fluctuation is that of a thick fluid. The uterus is central, and admits the sound two and a half inches.

The patient is very much disabled, and cannot rise from bed or turn without assistance. Lower part of abdomen is œdematous. Suffers from dyspnoea on exertion.

Ovariectomy performed on the day of examination. Drs. Rising, senior and junior, Collins, Holcomb, B. Welsh, J. Welsh, Heath, and Pease being present. An incision three inches in length was made in the linea alba, through thick adipose tissue, down to the cyst, the finger introduced and adhesions separated as far as could be reached. The cyst was now tapped, evacuating twenty-five pints of dark, chocolate-coloured, opaque fluid. On withdrawing the emptied cyst, the omentum was found attached to its upper surface; this was detached and placed in the hands of an assistant. Attached to the right side of the tumour was a hydatigenous mass, which was extremely fragile, and which broke up under the slightest pressure. The incision was enlarged to five inches and the tumour removed. The pedicle was attached to right side of the uterus, and was large and vascular. It was compressed by a ligature and then clamped. The omentum was ligatured, and the stumps placed between the edges of the incision, which was closed by wire sutures. The hydatid-like mass was supposed to be malignant—it was not examined microscopically. Estimated weight of tumour twenty-seven pounds. The patient died on the fifth day of septicæmia. This case belongs to the second class.

CASE 226. *Multilocular Ovarian Tumour; Extensive Adhesions, Parietal and Omental; Incision six inches in length; Recovery.*—June 9th, 1870, Dr. Atlee visited Mrs. T. A. B. in consultation with Prof. Gross. The patient is a short, fat woman, aged about forty-five years. Latterly she has lost a great deal of flesh. She has had several children. Last February she was struck by the corner of a table in the right groin, and suffered with pain from the blow for two days after. Two weeks after, a general swelling of the abdomen occurred, which has rapidly increased to the present size. She is very large; the shape of the abdomen is quite uniform; the only point of resonance is over the left lumbar region. There is indistinct fluctuation over the left side, none over the right; the left side is more elastic than the right. The pelvic cavity is free, and the uterus admits the sound three and a half inches.

Diagnosis.—A multilocular ovarian tumour. The left side is occupied by large cysts, while the right side contains a mass of densely packed smaller cysts.

Prognosis.—Unfavourable, in consequence of the great rapidity of the development of the tumour conjoined with its multilocular character.

June 12th, 1870, the patient was tapped, a large quantity of dense, straw-coloured, ropy fluid, coagulable by heat, being evacuated. Several cysts were emptied, the largest one occupying the posterior part of the abdominal cavity, and the others the left side of the median line. No fluid could be drawn from the right side of the tumour.

July 22. Ovariectomy performed, the following named gentlemen assisting: Prof. Gross, Drs. S. W. Gross, Mears, Burpee, Maury, and W. Lemmel Atlee. An incision four inches in length was made, in the linea alba, through the abdominal wall, which contained about three inches of adipose tissue, down to the tumour. The adhesions immediately about the incision were broken up by the finger, and the cyst was incised, giving exit to several quarts of dark, yellow-coloured fluid. The mass of small cysts on the right side were broken up by the hand introduced into the large cyst. This reduced the size of the tumour, and after detaching the extensive parietal adhesions, the incision was enlarged two inches, and the tumour extracted. The omental adhesions were separated, the bleeding ends secured by a ligature, and the redundant portion excised. The walls of the tumour were so fragile that they gave way under the slightest pressure, pouring the contents of the smallest cysts into the abdominal cavity. The tumour was attached to the right side of the uterus by a thick, vascular pedicle of good length, which was clamped and divided. The abdominal cavity was now cleansed, and the incision closed by wire sutures.

Several ounces of blood were lost without materially affecting the pulse.

The tumour involved the right ovary, and was largely multilocular in character. Weight of fluid sixty-two pounds; cyst, eight pounds; total weight, seventy pounds. The patient recovered without any untoward symptoms.

ART. XIV.—*History of a Remarkable Case of Modified Variola.* By JOSEPH R. BECK, M.D., of Fort Wayne, Ind.

FROM my case-book for October, 1870, I take the following notes of the rise, progress, and decline of a very curious case of modified variola, the

character and identity of which for a long time remained in doubt, and a diagnosis was in fact only established by the appearance of true variola in a number of persons who had been exposed to the contagion. None of the authorities upon the subject, within my reach, have described any disease at all nearly approaching this case either in symptoms or appearance. Trousseau, indeed, in his clinical lectures, speaks of a number of cases of modified smallpox; but his cases in no respect resembled this one, either in symptoms or in general character. I give the notes just as described in my case-book.

Oct. 12. I was called to see Mr. C. B., aged about 35, married; has been ailing for about two weeks, with general constitutional debility, though ordinarily a very stout, robust man. Was taken severely ill, yesterday evening at about 4 o'clock, with high fever and delirium. On inquiry I find that he had no rigor. This morning his face is flushed very much and considerably swollen; very fierce delirium, requiring strong effort to keep him in bed; pulse 125, tense and irritable; has a very annoying cough, attended with hoarseness; on percussion and auscultation find left lung clear, but marked symptoms of pneumonitis in the right; is obliged to use great effort in coughing, but has a very scanty expectoration of frothy mucus, streaked with blood; bowels constipated; appetite entirely gone; tongue coated with a light white fur; whole surface of body very hot; urine natural; complains of severe pain in right side of chest, and over the frontal sinus. Diagnosis pneumonitis. Ordered ammon. carb. gr. iij, in solution, every two hours.

12th. 1 P.M. Same as in morning, with exception of suffusion of eyes, discharge of tears from them, and well marked coryza. 6.30 P.M. More suffusion of eyes; cough somewhat easier; pulse 128; continue ammon. carb. 10 P.M. Have been sent for by wife of patient on account of an eruption appearing on patient's face, which is entirely covered with a dull cherry-red eruption, somewhat crescentic in form, but not clearly so. He is otherwise unchanged. Continue treatment.

13th. 9 A.M. Unchanged in any respect, except cough, which is much easier, expectoration, which is freer, and eruption, which is so marked as to roughen the skin. 1 P.M. No more bloody expectoration; cough much easier; rales in right lung disappearing; pulse 120; high delirium; eruption showing a disposition to become papular; bowels still constipated; urine natural; floccitation; slight subsultus; no sleep for three nights; otherwise same. Discontinue ammonia treatment. 7 P.M. Eruption becoming slightly vesicular; delirium unabated; subsultus and floccitation increasing; pulse 120; skin as hot as ever, and very dry. Ordered pulv. ipecac. comp., gr. x, every three hours during night. First diagnosis untenable, and abandoned on appearance of eruption.

14th. 8.30 A.M. Patient worse; had a very bad night; no sleep; furious delirium during the night, requiring the strength of two strong men to hold him in bed. This morning the eruption is very distinctly vesicular upon the face and hands, but slightly so on trunk and lower extremities. It covers the face, passing through the mouth down into the half arches, and the larynx; studding the meatus auditorius externus and the membrana tympani; covering the mucous membrane of the nostrils as far as can be seen, and entirely stopping his breathing through that channel. The diagnosis at this period is not at all clear; bowels constipated; urine

natural; delirium as bad as ever; pulse 124; breathing per orem entirely; both lungs clear; no rales; breathing full, free, and unobstructed; tongue heavily coated with grayish-white fur in centre, and bright-red at the tip and edges, and very dry, but no sordes; involuntary relaxation of the sphincters; the rectal evacuation very scant and hard; subsultus and floccitation increasing; has had no sleep yet; prognosis very unfavourable. I desired to see counsel, and at 9.30 A.M. saw the case in conjunction with Drs. G. W. Boerstler, sr., and G. W. Boerstler, jr. No change has taken place, except for the worse. 1 P.M. Vesicles increasing in size; contain a transparent fluid; no sign of milkiness; no pus-cells under the microscope; to endeavour to force some sleep, ordered the following hypnotic: R.—Chloral hydrat. \mathfrak{z} iv, potass. bromid. gr. xl, aquæ destillat., glycerinæ, aa $\mathfrak{f}\mathfrak{z}$ ij.—M. Sig.—give a tablespoonful every three hours until sleep is induced; give also potass. acetat. gr. v, in solution every hour. 6.30 P.M. Slept about thirty minutes; delirium somewhat more passive; otherwise same; ordered liquor magnesiæ citrat. $\mathfrak{f}\mathfrak{z}$ vij, to be repeated at or near midnight, if bowels are not moved by that time; continue chloral and potass. acet.

15th. 8.30 A.M. Saw the case with the Drs. Boerstler; patient has passed a bad night; very restless; no sleep; delirium not so violent; mouth and throat very dry, for the relief of which ordered ice in small lumps *ad libitum*; has been freely purged, but had to take \mathcal{O} j of the magnesia solution before this was effected; there is nothing of note about the evacuations; has eaten about half a pint of oyster broth since early last evening; cough has entirely disappeared; eruption more plentiful, and larger in size than ever; a large number of the vesicles are of the size of the large English marrowfat pea; continue chloral and potass. acet. 1.30 P.M. No improvement. 8 P.M. Same, but patient becoming much weaker; pulse 115 and weak; no sleep. Continue treatment.

16th. 9 A.M. Visited with counsel; patient about the same as last night; upon a close examination of a vesicle upon the forehead, and one upon the hand, the contents showed an admixture of pus-cells, the first yet noticed (these vesicles had been punctured and the contents examined once before); the other vesicles are yet very much distended with the clear liquid; no diagnosis yet; patient getting more and more prostrate; push the chloral and the febrifuge. 2 P.M. Same, except pulse is down to 96. Continue treatment. 9 P.M. Has been in a deep sleep, without once awaking, since 3 P.M.; he is somewhat refreshed, and his appearance is better. Discontinue chloral, but continue the febrifuge.

17th. 8.30 A.M. Shows a very marked change for the better; pulse 82; tongue somewhat cleaner, but very dry and stiff; no alvine evacuation since Saturday morning; no tympanites; delirium much abated; slept quietly nearly all night; says he feels comfortable; no pain; urine very much increased in quantity, but otherwise natural; eruption is at its height, and each vesicle is entirely distinct from any other; they are very full and prominent; not a sign of umbilication; contents perfectly clear; not a sign of pus anywhere; external inspection shows them quite white, but upon opening their clearness is demonstrated; a few of the vesicles have aborted, their contents seem to have been absorbed, and the distended cuticle has resumed its former position; no sign of desquamation, or of ulceration of a single vesicle; those which have aborted leave a small spot, not half as large as the head of a pin in size, and very much resembling the spot following a puncture of the skin with a needle; symptoms are gene-

rally decidedly for the better. 1 P.M. Still improving. Continue potass. acet. 8 P.M. Patient doing well; slept much of the afternoon; has been perspiring very freely for several hours. Continue treatment.

18th. 9 A.M. Eruption steadily decreasing by absorption; mind perfectly clear; feels quite well; discontinue febrifuge; ordered liq. magnes. citrat. in doses as before, on account of constipation; allow him three or four glasses of beer to-day; has eaten since yesterday noon a broiled quail and piece of a chicken, and appetite improving; give nothing but aperient. 2 P.M. Bowels not moved; ordered another pint of the magnesia solution; eruption steadily decreasing; mouth, tongue, and fauces becoming quite moist; urine now perfectly natural in quantity, as it has been from the first in quality; give only the cathartic. 9 P.M. Still on the mend; bowels remain obstinately constipated, for which ordered a third pint of the magnesia solution, to be taken at one dose; also ordered three comp. cathart. pills, to be taken at midnight, if the other aperient is not heard from by that time.

19th. 9 A.M. Doing very well, except cough has commenced again; on examination find some subacute bronchial inflammation in both lungs; commence the ammon. carb. again; give in addition four or five glasses of beer to-day; bowels have been well moved. 1 P.M. Patient still on the mend. 9 P.M. State of patient better.

20th. 8.30 A.M. Did not pass a comfortable night, on account of distress from cough; continue ammon. and give in addition pulv. ipecac. comp. gr. x, every three hours; cough is not one of great moment, but is annoying and harassing to patient; eruption steadily disappearing, the smaller vesicles and the most imperfect ones going first; strength is accumulating with unusual rapidity; will allow him to sit up several hours during to-day. 9 P.M. Cough somewhat easier, but still very troublesome; give no medicine to-night; sat up nearly half of to-day, and felt no inconvenience therefrom.

21st. 9 A.M. Cough still troublesome; find nothing in condition of lungs to account for this persistency; cough is simply due to sensitiveness of the mucous lining of the larger bronchial tubes; to relieve this irritability, ordered: R—Syrupus toltan., syrupus scillæ, āā f̄ij, morphiæ sulphatis gr. ij, liq. potass. citratis f̄ijiv.—M.; give a dessertspoonful every three hours. Bowels have not been moved since 19th; appetite good; no evidence of pitting; still perspires freely; pulse 76, strong, full, and regular; tongue quite clean; nasal passages open and clear; first notice that he is slightly deaf; give him all he wants to eat, and as much beer as he desires. 9 P.M. Same. Continue treatment.

22d. 9.30 A.M. Still continues to improve; cough almost entirely gone; no treatment necessary to-day, except thorough ventilation, and feed him well; let him sit up until he becomes tired. 9 P.M. Continued improvement manifest.

23d. Improving very rapidly; cough entirely gone; bowels still constipated; has some headache; appetite very good. Ordered as a purge: R.—Hyd. chlor. mit., sodæ bicarbonat., āā gr. x. Ft. in chart. No. j., and give at once. 9 P.M. Patient well purged to-day; feels very comfortable; eruption almost entirely gone, leaving only the spots spoken of above. Will give him no more medicine.

Remarks.—The patient convalesced rapidly, and in two or three days from the last entry as above recorded, he was discharged cured, although

I continued to see him twice every day for nearly three weeks longer, being in attendance upon his wife, who contracted varioloid, and upon his infant child, who received a full dose of genuine variola, also from contact with its father. Both of these cases were typical ones of their disease.

These remarks should be premised with the statement that our patient had been vaccinated successfully a little less than three years ago, and has a large scar on his left arm to show for it. I deem this case so remarkable, that I shall only observe upon what presented itself to my mind, as briefly as possible, and shall not attempt to advance any theory whatever, and shall close by subjoining the remarks by the senior counsel at the end of this article.

The most curious phase of the disease was of course the delirium. This was persistent and furious almost all the time of its duration. Nothing seemed to produce any alleviating effect, and the solution of the bromide of the hydrate of chloral, used as prepared above, was resorted to; and, although I cannot say with so many others of the profession in reference to these drugs, that "it was productive of the happiest results," yet it did seem eventually to control the delirium, although it required the exhibition of an immense amount of the drug, there having been given altogether nineteen doses, each containing thirty grains of the hydrate of chloral, and five grains of the bromide of potassium.

The next point to notice is the length of time that elapsed between the time of his being exposed to any possible contagion, and the time of the invasion of the disease. He had been to Cincinnati, Ohio, on a business visit, shortly before he was taken ill, but had been at home fully ten weeks before the attack of the disease, thus furnishing a remarkable example of the length of the period of incubation in this instance.

In the third place, the persistent constipation should be noticed, and I pass this with the mere mention of the fact, and without attempting to account therefor.

Fourthly, as to the eruption. This was most peculiar, the pustules never *pointing* in a single instance, never ulcerating, nor even becoming umbilicated in the least degree. On the contrary, each individual pustule retained a purely and distinctly conoidal form from its first appearance until the final absorption of its contents. The action of these pustules, especially in their disappearance, was remarkable, and all my search to find an instance of some eruptive fever, which might approximate to this case in appearance, has been in vain. It has fallen to my lot to see numerous cases of true and undoubted variola, as well as numbers of cases of varioloid, but I am free to state that there does not now occur to me a single instance of a pustule in either of the above that at all resembled these.

That this case was really *smallpox*, though in a modified form, there can exist no manner of doubt, when the other cases which contracted dis-

ease from exposure to this one are considered. These after cases were nineteen in number as far as heard from, and were divided as follows : sixteen cases of true variola, and three cases of varioloid. Although strenuous endeavours were made by us, under suspicion, to restrain outsiders from visiting the case under consideration, yet these efforts were ineffectual, as was shown by the other cases arising as they did. Each one of these latter cases followed the usual variolous course in its appearance, duration, and decline, and all were more or less pitted, while the patient in this first, and by long odds the most dangerous case, bears not a single pit or mark of any kind.

Fifth, and lastly : As to the probable source of contagion. All that we could discover under this head is as follows : after our patient became convalescent, he told us that, while in the city of Cincinnati, he slept one night in the same bed with his brother. Now this brother had had smallpox some seven months prior to the time spoken of, and had been during his illness, by order of the Board of Health, confined to, and treated in the Roh's Hill Pest House, and he had been discharged from that institution nearly or quite six months before the visit of our patient to him. Was this the source of contagion in our case ? I cannot certainly say, but have no other probable source to offer for consideration.

Dr. Geo. W. Boerstler, sr., the senior counsel, appends the following :—

"I fully concur with my friend, Dr. Beck, in his accurate description of the above case while it was under my observation. That it was an extraordinary case of a curiously modified form of true *variola* cannot now be doubted ; and a *true diagnosis* was difficult to reach. The first stage of the *eruption* simulated rubeola ; when at its acme, the modified form *made the diagnosis equally difficult* ; as did the violence of the symptoms, especially the cerebral disturbance.

"The patient had been, while a resident of Germany, inoculated with gennine smallpox virus ; and its progress was doubtless carefully noted at that time, as demanded by the severe penalties of law."

ART. XV.—*Necrosis of Inferior Maxillary Bone ; Subperiosteal Resection of the whole of the Ascending and a good portion of the Horizontal Ramus ; Recovery, with a Reproduction of Bone and Good Motion.*
By Z. SIDNEY SCALES, M.D., of Mobile, Alabama.

L. M., coloured, æt. 21, labourer, reports that in 1867 he had a congestive chill, was jaundiced, and was treated with large doses of calomel ; since which time has been troubled with bad teeth.

During the fall of last year he consulted a dentist of this city (Dr.

Shaw), who extracted the teeth from the diseased jaw, removed two small pieces of necrosed bone, and kindly referred the case to me for treatment.

The patient was first seen by me in September, 1870, and, as yellow fever was at that time prevalent in this city in an epidemic form, I declined to operate, as it is prone to engraft itself upon surgical and other diseases, but put him on alterative treatment, with the promise to operate on the disappearance of the yellow fever poison.

During the latter part of February, 1871, the patient again called on me, and on examination I found considerable enlargement of the cheek, with thickening of ascending ramus, and two sinuses in the superior carotid triangle freely discharging purulent matter, the sinuses communicating with each other.

On passing the probe, it entered the bone about the angle of the jaw, and passed into the ascending ramus, coming in contact with dead bone.

On the 25th February, assisted by Drs. Gilmore, Hall, and Sawyer, I cut down upon the diseased bone, peeled off the periosteum, and removed the whole of the ascending ramus, including condyle and coronoid, and a portion of the horizontal ramus, dividing the latter with a chain-saw about one inch from the symphysis.

Patient made a speedy recovery, the incision healing in almost its entire extent by first intention.

Dr. Shaw, who saw the case about two weeks ago, reports that there is a reproduction of bone, with good motion.

MOBILE, ALABAMA, June 23, 1871.

ART. XVI.—*Consumption: Is it Contagious?* By LAWSON TAIT, F.R.C.S. Eng., F.R.C.S. and L.R.C.P. Ed., &c., Surgeon to the Birmingham and Midland Hospital for Women.

THE question of the contagious nature of pulmonary consumption is one in which I have long been interested, and on which I have made many observations in dispensary practice. Long before I met with the case which I shall afterwards detail, I had seen cases which seemed to me to point out strongly that the Italian doctrine had some grounds for existence, but my cases were all deficient at some point or other in the chain of evidence. Dr. Condie's cases, as narrated in the preceding number of this Journal, page 119, are of the same kind, suggestive but not decisive: for the death of a husband from phthisis after the loss of a wife for whom he had an intense devotion might be explained otherwise than by contagion, and so also in the case of sisters, in whom a similarity of constitution exposed to similar evil influences might develop a common constitutional taint. The question is one of mighty clinical importance, and it has often struck me with amazement that neither in this country nor in America has any physician set himself to work to decide, from out of the

sadly too great abundance of evidence at our disposal, the truth or otherwise of a doctrine so firmly held by our continental brethren. It has been alluded to by nearly all our writers on phthisis, but authoritative opinions have been given by none, as far as I am aware, for or against the view of its contagious character. A lingering suspicion, however, seems to exist in the minds of most medical men, for we constantly hear of the advice being given, that the patient should sleep alone. For my own part, I never fail to impress this precaution, for I entertain the belief strongly, that pulmonary consumption may be consummated by prolonged contact, especially as in sleeping, between the healthy and diseased. The following case mainly contributed to the formation of my opinion:—

“About three years ago, there came one day to consult me a pretty, flaxen-haired, blue-eyed girl of about eighteen, whose face alone it was enough to look at to designate pulmonary consumption. She told me her mother had died of it, and so had one brother. As is the wont of women in affliction, she brought a friend with her to help her through the ordeal of the visit, a perfect contrast to herself, tall, stout and strong, the very picture of health, a handsome Irish brunette, born near Sligo. The two worked together at one of our Yorkshire wool-mills; and it would seem as if the strong contrast there was between them had caused their close friendship. They lodged together, and until their visit to me had slept together. As is my custom, I at once insisted on the patient having a room to herself, and after my injunction this was strictly carried out. I need not detail the case of the first girl. Suffice it to say that she passed through several attacks of softening, during each of which she was attended carefully but not closely by her friend, who, during the time when the patient was unable to work, earned the support of both, and after those attacks she recovered completely, married, and is now the mother of two children. Her devoted friend had a different and sadder fate; for only five weeks after her first visit to me in the capacity of companion to my patient, she herself came with the dyspeptic symptoms which usher in the first stage of phthisis. During the time she was nursing her friend, the physical signs of incipient consumption were manifested, and despite all my endeavours, it ran an almost unchecked course in rather less than three months. Long before her death, the conditions of the two girls were reversed: the patient had become the nurse, and the nurse had taken the patient's bed; the former, whose fate I had regarded as decided, recovered; the latter, who really sacrificed herself for her friend, died. It was strange and most interesting to me to find that the survivor felt keenly that she had given the disease to her companion, and was the unconscious cause of her death. In the case of the girl who died, I was fortunately able to get a family history very completely, and to eliminate any difficulty there might have remained as to a family taint. Her father and mother, and several brothers and sisters were alive and all strong. She had a grandfather and two grandmothers alive, and no instance had occurred in the family of death from chest disease or any of the usually allied affections. Nor in her own history was there any point which could be indicated as one of likely explanation for the phthisis. The whole evidence, negative certainly, but none the less valuable on that account, pointed to the conclusion that it was a case of phthisis derived from contagion.”

BIRMINGHAM, August 25, 1871.

ART. XVII.—*An Inquiry into the Causes, Nature, and Treatment of Rigidity of the Os Uteri.* By A. B. ISHAM, M.D., of Cincinnati, Ohio.

WHILE practitioners of the obstetric art from its first dawn have recognized rigidity of the os as an impediment to delivery, singularly enough, little knowledge of the producing causes has ever been declared beyond the traditional and allaying theory of *spasm*.

We will first enter into a consideration of the muscular anatomy of the uterus. Anatomists do not agree as to the arrangement of the uterine muscular fibres, and it is not necessary that they should; for it is known that the development of muscular fibre in the uterus bears a direct proportion to the advancement of gestation, and that the muscular cells atrophy, decay, and are carried away after the completion of labour; so that no two investigators may have examined a uterus in exactly the same state. But they all assent to the important fact that the organ is composed of three muscular coats—an external, middle, and internal: the external coat composed of fibres arranged longitudinally and transversely, forming a thin layer over the anterior and posterior surfaces, and running backwards from the cervix across the body, and covering the fundus; the middle consisting of thick and strong fibres passing in all directions over the body, surrounding the vessels of the organ, and giving its thickest and strongest fibres to the fundus; and the internal coat, the fibres of which are arranged in a circular and transverse manner, the circular fibres being chiefly confined to the middle of the body and the Fallopian tubes—that fibres of all these three layers are continued to the ligaments, ovaries, and Fallopian tubes; and that all these coats merge together at the junction of the body and neck, to be connected with the circular fibres constituting the sphincter of the os and cervix. We have here, by the muscular distribution, a division of the organ into two distinct parts—the body or globe of the uterus, and the neck or entrance—the boundary constituted by a muscular raphé; but each part subordinate to the other, and capable of acting as a whole.

By the disposition of the muscles over the body of the uterus, the walls of the organ are enabled to contract themselves in any part under the application of local stimuli, as a retained placenta or a polypus within the womb; or, the muscular force, acting as a whole, contracts the organ in all its directions upon itself, or contents, producing a peristaltic rotatory motion.

Having thus briefly considered the anatomy, in the further elucidation of the subject it becomes necessary to take a glance into the mechanism of labour. To produce an expulsion of the fetus, there is called into play the aid of three factors:—

- a. A nervous influence.
- b. Muscular action.
- c. A perfect harmonious action of all the parts.

The nervous influence is supplied to the gravid uterus by the completion of the term of gestation, through the abundant provision of the sympathetic, coming from the hypogastric, spermatic, and sacral plexuses. This impression, acting upon the peripheral extremities of the fibrils, produces a contraction first of the body at its junction with the neck, which passes from thence upward over the body to the fundus to be reflected back, thus setting up a rhythmical muscular action. The uterus, taking hold of its contents, forces them down against the neck, while at the same time, by the shortening of its longitudinal and oblique fibres, it makes traction upon the circular fibres of the os—the fœtus acting as a fulcrum—assisting its dilatation. The neck of the womb then, having received through its nerves the impression propagated by the contraction of the uterine muscles, begins the performance of its own inherent function—the power of dilatation. The nervous stimuli continue in force, the uterine muscles go on in their office of forcible peristaltic contraction, forcing down the child and pulling on the sphincter of the os, which grows wider and wider, until—throwing out all pelvic or vaginal obstructions—the contents pass through, and the process is at an end.

Thus have been detailed the rise and progress of the simple natural act of labour. Nothing to molest or make afraid. No need of bloodletting, pomatum, titillation, pressure, emetics, narcotism, anæsthesia, etc., here.

Having passed in review the essential anatomy of the uterus, muscular and nervous, and the mechanism of labour as far as the uterus is concerned, we are now prepared to lay down the following propositions:—

1. That these forces operate to induce dilatation of the os uteri, viz:
a. Inherent expansile power. *b.* Pressure of the presenting parts. *c.* Contraction of the uterine muscles.

2. That inoperation of the first factor may be occasioned by deficient nerve and blood supply, or by adventitious growths upon the neck and os.

3. That the inaction of the second agent results from antagonism of the uterine muscles, or from uterine inertia.

4. That the causes influencing the loss of the second factor in the process also operate in preventing the action of the third.

5. That the absence of any of these factors may produce rigidity and retard labour.

6. That without the rational aid of the obstetrician they may absolutely prevent labour.

As to the first factor entering into the dilatation of the os—the inherent expansile power—it is manifest by its dilatation at times when there have been no uterine contractions to produce it, and where it has been evoked by the application of some irritation to the external surface of the os, as, by the continuous current of water to bring about premature delivery; or as sometimes excited by friction, under the pleasing delusion of the mysterious therapy of some ointment. And further, by the comparison

of Dr. Tyler Smith (Lectures on Theory and Practice of Obstetrics, *London Lancet*, 1856, pp. 143-4) of the hemorrhage in placenta prævia with hemorrhage from the fundus. "In hemorrhage from the fundus, the loss of blood is arrested during a pain, because the fundus is in a state of contraction; in hemorrhage from the os and cervix, the flow is increased at each return of the pains, because the cervix is in a state of dilatation. If the dilatation were merely a mechanical distension, the pressure which dilated the os uteri would arrest the hemorrhage at the same time."

The operation of the second factor—pressure of the presenting part—is so evident as to need no demonstration.

In regard to the third factor—contraction of uterine muscles—the longitudinal, transverse, and oblique fibres of the uterus are connected with the circular fibres of the os, and it must follow that when the uterine muscles are contracted upon the fœtus, crowding it down against the cervix, the fœtus is made a fulcrum by the resistance met at the outlet, and part of the force of contracting uterine muscles must make traction upon the sphincter of the os, pulling it up over the presenting part.

In elucidation of the 2d proposition, it may be stated that the neck of the womb receives a plentiful nerve and blood supply from the same sources which furnish it to the body—the hypogastric, spermatic, and sacral plexuses of nerves, and the hypogastric and spermatic arteries. Inflammations of the os may condense its structure, obliterate the vessels, disturb the nervous supply, and thereby totally destroy its agency in the economy of labour, leaving it in a helpless and rigid condition. An analogy may be found in immobility of the iris, the result of inflammatory changes. Adventitious growths upon the cervix may usurp the place of the muscular fibres of the os, and thus destroy its function of dilatation.

In proof of the 3d proposition is advanced the muscular anatomy of the uterus. The fibres of the body converging about the neck may antagonize those of the fundus, and the muscles which should co-ordinate their movements to expel the fœtus make of it a ball with which their force is expended in a game of battledoor. This may come from over-distension, caused by undue accumulation of the amniotic fluid or from adventitious growths upon the body of the organ, putting the muscles upon the stretch, so that sufficient leverage is not obtained to make either well-directed effort at expulsion, or produce traction upon the os, and spasmodic action ensues. Smellie details two cases of rigid os with great accumulation of liquor amnii where no progress was made until the membranes were ruptured, when labour went on well. This allowed the presenting part to engage the os, the muscles to take on their natural action, and parturition to proceed. Atony, want of vigour or inertia of the uterine muscles hinders labour and renders inactive the second factor in the process of dilation, for where no power is exerted no pressure occurs.

The 3d proposition proven, the 4th naturally follows. If there is a

waste of muscular contractile power in the body of the uterus from overdistension from spasm, or from any cause whatever, there is a loss of tractile force upon the os, and the third agent in the mechanism of dilatation is inert. If there is no power, of course there can be no muscular action, and the 4th proposition may rest with the 3d.

The four foregoing propositions established, the 5th obtains also. In the absence of any of these factors there may not be left power in the others to effect the process.

We have now arrived at the 6th and last proposition. Without a knowledge of these producing causes of dilatation of the os uteri, the obstetrician might as wisely jump into a bramble bush as to treat a case of rigidity, the first agent being in abeyance—the others in full and powerful play, by abdominal pressure over the uterine walls. Or, if from inaction of the second producing cause, he should administer an hypodermic injection. And again, from inoperation of the third factor, he should bleed his patient to syncope. Yet such treatment has been practised—how often let old and valued obstetric annals tell—and is yet in vogue wherever the art of obstetrics prevails. If there is no well-grounded idea then in the mind of the obstetrician as to the pathology of the case, his haphazard use of means to ends may eventuate in confirming the difficulty, exhausting the forces he should aid, or stimulating those already in too powerful action, until the vitality of the system is impaired, and death steps in to put a quietus upon the throes of parturition, effectually preventing labour.

Diagnosis.—Preliminary to treatment we will devote a little attention to the way of ascertaining the agencies operating to produce rigidity of the os uteri, and prevent its dilatation.

If we find a good degree of uterine contraction, and discover by touch applied to the external surface of the os, that strong pressure is exerted against it, then we may reasonably conclude that the bar to dilatation is occasioned by the failure of the expansile power inherent in the os.

If there is found vigorous uterine action, and that the os is rigid with little or no amount of pressure against it—taking for granted that the pains have been in progress a sufficient length of time—we may deduce the inference that there is an antagonism or spasm of uterine muscles preventing sufficient pressure against the os.

If the uterus is found contracting with no pressure exercised upon the os, it being rigid and but little dilated, we are enabled to decide that there is an antagonism or spasm of the uterine muscles, rendering inoperative the second and third factors in the production of dilatation. Or, if there be atony or inertia of the uterus, and the os is in small or great part dilated with rigidity, the conclusion is that loss of uterine power has paralyzed the second and third factors in the process of dilatation. And lastly, if the period of gestation is completed, and the os undilated, there

is a paralysis of all the factors engaged in effecting dilatation, and consequently a failure of action in any.

Treatment.—We have now only to present the treatment, and as an initiatory step some of the methods recommended by obstetrical writers of accepted authority will be cursorily reviewed.

Standing first in the estimation of Smellie, the two Ramsbothams, De-wees, Burns, Tyler Smith, Bedford, and many others, is copious venesection. Various and conflicting are the ideas in regard to the mode of action of this means, but the general belief is that it is a relaxant of spasm, and, as rigidity is the offspring of spasm, it is thereby relieved. So in this way spasm is sometimes relieved, but unfortunately it may yet more often relieve the patient of life. It is a therapeutical means that should be used very rarely, and never, unless there is a decided inflammatory impress upon the general system.

Opium and other narcotics are also high in the favour of many obstetricians, and deservedly so, as in case of inordinate uterine contractions constituting spasm, where it puts a lock upon the muscles and allows their equilibrium to be restored. Its use is however limited to the treatment of this condition.

The employment of ointments to the mouth of the womb receives the sanction of eminent accoucheurs, and particularly is the ointment of belladonna thought to possess great powers of dilatation. The friction and titillation consequent upon the application of unguents very likely often stimulate the nervous filaments of the neck and induce the exercise of its expansile power, but beyond that the benefit to be derived from their use is *nil*.

Emetics are advised and very warmly advocated by a large number of authors, but it is probable that few cases ever appear where the use of emetics would seem to be indicated.

Enemas of innumerable supposed medicinal substances have been used and with favour by many obstetricians of note. They may have a feeble power of stimulation upon the os, but their employment is to be deprecated as likely to wash away the natural secretions of the parts.

Warm baths and external heat are urged by some. They may have some slight nervi-motor influence. The movement necessary to make them available must more than counterbalance any advantage to be derived.

Incisions of the os are recommended by Burns, Lever, Tyler Smith, and others. There is no condition of the os, probably, unless it be cedema or inflammation with great effusion, where this practice should be resorted to. And even in these cases it should be employed very cautiously and with hesitation, for the weakening of the structure by punctures may cause rupture, while if let alone nature may overcome the impediment.

Pressure externally applied to the abdomen over the uterus is much in vogue among German, French, and some English obstetricians. In rigidity

of the os from inertia uteri this practice is in the highest degree valuable, but it should not obtain where there exists rigidity from any other cause, for it may then be made the prime factor of rupture.

What, then, are the therapeutical means upon which we may most confidently rely as safe, reliable, and entirely suited to the ends to be accomplished? For purposes of convenience, we shall divide them into four classes :—

1. Those which may assist the inherent expansile power of the os.
2. Those which may bring about dilatation by pressure.
3. Those which may aid dilatation by producing muscular traction upon the os.
4. Those which may combine the aid of all the factors engaged in dilatation.

Therapeutic Agents of the First Class.—A continuous current of water, either warm or cold, applied separately or alternately, is an efficient means of producing an expansion of the os. It acts directly as an excitant of the circular fibres of the os and cervix, and it undoubtedly also secondarily brings into action the other forces of dilatation.

Barnes's water bag is a mechanical agent of great value, operating in the same way as the water current, with the additional power of expanding pressure applied equally to all parts of the os.

The *electro-galvanic current* passed over the os furnishes another powerful stimulus to the nervi-motor function, acting remotely in the same way as the other remedies of this class.

Agents of the Second Class.—*Rupture of the membranes* will be considered in the 4th class. *External pressure* upon the abdominal walls over the uterus, if well applied, supplies a power lacking in the uterine muscles, forcing down the contents of the womb against the os, and substituting an artificial pressure of considerable power for the natural one.

Forceps may be called to aid if there is sufficient dilatation for their introduction. They afford a mighty power in traction, supplying from without the force wanting within, and producing gradual dilatation over them.

Agents of the Third Class.—*Chloroform* has the weight of high authority as being one of the first therapeutical agents, administered by inhalation in the treatment of complicated labour. Carried to full anæsthesia it perfectly relaxes every tissue in the whole system, and its efficiency in relieving spasm is manifest. It would thus enable the os uteri to be dilated by mechanical means, supplanting the place of all the natural forces of dilatation, and rendering delivery possible by instrumental aid. It has also another property, that of putting in abeyance the cerebro-spinal nervous sense, thereby undoing spasmodic action, while the play of muscular force may continue in operation. In this way it is a useful means of overcoming

antagonism of uterine muscles. That chloroform is not applicable to debilitated subjects is apparent.

Sulphuric ether has properties analogous to chloroform, but it is considered by many to be the less hazardous remedy. They are both agents not to be trifled with, for, carried too far, they may produce paralysis of the heart or respiratory apparatus.

Hydrate of chloral is a grand addendum to our therapeutic means. By its contact with the alkalies in the blood chloroform is liberated. In doses of x grs. to ʒss, repeated, if necessary, it quiets spasmodic action, restores balance to muscular effort, gives ease and sleep to the patient, while it in no way interferes with the natural play of the uterine muscles—labour quietly proceeding under its influence. It is easier of administration than chloroform or sulphuric ether, much safer, and in most cases as efficient. Where there is great gastric irritability, its use would seem to be contra-indicated.

Hypodermic injections of morphia have a speedy and reliable influence in suspending spasm and contraction of uterine muscles. They put a lock upon muscular action by rendering unconscious the muscular nervous sense, and thereby enable the muscles to recuperate their wasted energies. Morphia may be given *per orem* for the same purpose; but where speedy action is desired, or where there is gastric disturbance, the hypodermic method is preferable.

Opium has the same action as its alkaloid, morphia, but the latter is preferable on account of its smaller dose, and its more certain and speedy action.

Agents of the Fourth Class.—*Rupture of the membranes*, where there is a deficiency of pressure against the os, constitutes a measure of great value; it enables the presenting part to engage advantageously, and furnishes leverage to bring into play the third factor of dilatation. This means may also operate upon the inherent expansile power of the muscles of the cervix by letting down the presenting part against it to produce excitation of the nervi-motor function.

Stimulants and tonics, which, through the blood, give tone and vigour to all parts of the system, as alcoholic liquors, extract of meat, ammonia, quinia, and strychnia (operating through the spinal nervous system), are all invaluable remedies in inertia uteri. They give new life to the dormant muscles, and enable them to make the traction needed, to produce pressure, and to stimulate the nervous influence—all the factors in the process of dilatation.

Galvanism has been alluded to as an agent of the first class. By its action upon the nervous influence it may combine all the agencies entering into the expansion of the os uteri. The current should be applied by one pole to the external surface of the os, while the other is placed over the

abdomen in front of the uterus, and gradually swept around to the spine, over the sacrum and lumbar vertebræ.

Ergot of rye has a well-settled power of stimulating uterine contractions. Its mode of action, after much discussion, is not well ascertained. It may be administered by the mouth in any of the several ways in which it is prepared.

Tartar emetic, given in minute doses, often exerts a beneficial effect in relaxing rigidity of the os. Its physiological properties in this connection are not well understood.

ART. XVIII.—*Traumatic Tetanus, cured with Hydrate of Chloral.*

By J. SUYDAM KNOX, M.D., of Somerville, New Jersey.

MICHAEL C., aged seventeen, sent for me July 10, 1871. Found him sweating profusely, jaws firmly locked, tonic spasms of all the voluntary muscles, with exacerbations whenever any one approached or addressed him, or the least air blew upon him. Pulse 120; bowels regular; urine high-coloured, and passed frequently; face drawn and anxious.

He states that on June 12, in New York, his right great toe was crushed by a falling cake of ice. June 20, experienced some stiffness of jaws, followed in two days with general cramps in limbs. June 25, called a physician, who prescribed medicine which seemed to control cramps and induce sleep. Came to Somerville, N. J., the day I was first called.

Judging from his description that hydrate of chloral had been administered, I prescribed it in thirty grain doses, to be taken every four hours in syr. acaciæ. It was taken easily, as he could swallow whenever the legs were held firmly. Lemonade, beef-tea, and brandy with milk were freely administered.

The chloral promptly controlled the spasms, and induced sleep. At the end of four days it was administered only night and morning. July 20, he was discharged cured.

TRANSACTIONS OF SOCIETIES.

ART. XIX.—*Summary of the Transactions of the College of Physicians of Philadelphia.*

1871. April 19. Dr. R. N. DOWNS read the following case of *Punctured Fracture of the Skull, penetrating the Brain; Apparent Recovery; Death from Cerebral Suppuration four months subsequently.*

While T. C., æt. 12, was playing with some friends on the afternoon of June 8, 1869, a board, through one end of which a tenpenny nail projected for an inch and a half, fell from a height of two feet, and struck him on the head. The nail entered his skull a little posterior to, and on a line with, the right parietal protuberance, and penetrated the brain to the depth of an inch and a quarter; the board falling to the ground, broke the nail off on a level with the surface of the skull, in which it remained firmly imbedded. The lad walked home, a distance of a quarter of a mile, having called on his way at the office of a physician, who was, however, not at home. I saw the patient about an hour after the accident, and found him sitting quietly in a chair, unconcerned, and suffering from neither pain, headache, nor other unpleasant symptom. With a pair of strong bone-forceps I succeeded with some difficulty in extracting the nail, which was an inch and five-sixteenths in length. A drop or two of blood followed, and the boy now complained of some soreness at the wound, which was dressed with lint wet with cold water. He was put to bed, perfect quiet enjoined, and ʒiij of the solution of citrate of magnesia ordered to be given every two hours till it operated on the bowels. During the night he slept a little, did not complain of headache, had slight nausea occasionally, and vomited once towards morning; his bowels were moved several times.

Next day, June 9, he was apparently well, except for occasional nausea; there was no pain nor headache; skin cool, and temperature good; had passed urine freely; pulse 85; asked for food. Ordered $\frac{1}{4}$ grain of calomel every two hours; no food but barley-water; ice as freely as he wished; mustard plasters to back of neck and epigastrium; cold water dressing to the wound. In the evening, his pulse was 100, soft and compressible; no febrile excitement; vomiting had occurred several times on awakening out of sleep; ordered gtt. jss doses of tincture of aconite root, to be taken regularly with the mercurial if awake.

June 10. Less disposition to nausea, and the tongue was slightly furred.

11th. Had been comfortable during the past twenty-four hours; less nausea; no vomiting. Pulse not so frequent, though somewhat wiry and quick; tongue the same as before. The wound was inflamed around the edges; the patient was anxious for more and better food, which, however, was not allowed. Treatment as before, omitting the aconite.

13th. No nausea nor vomiting; appetite craving; tongue clean; pulse 80, and of good character; secretions and excretions natural; the wound discharging a few drops of healthy pus; intelligence perfect; sleep natural and without dreams.

About 1½ A.M. the next morning I was called up and informed that the patient was in convulsions, and, on reaching his house, found that he had been in this condition thirty minutes. The convulsions were very severe, active, general, and with scarcely a moment's intermission. Sinapisms were applied to the back and extremities, and leeches to the temples and behind the ears, while an injection of castor oil and turpentine was administered. The fits still continuing, cups were applied to the neck and between the shoulders, the mustard plasters continued, and an assafoetida enema given. At 8 A.M. my friend Dr. Betton met me in consultation, when we agreed to repeat the stimulating injections, and to sprinkle on the patient's tongue ½ gr. doses of calomel every hour, continuing the use of counter-irritants to the spine. At noon I thought the patient dying; the convulsions still continued, though much milder; the pupils were widely dilated, and the eyes strongly convergent; mucous râles throughout the whole chest; slow, gasping respiration; pulse too weak to be counted; countenance suffused, almost purple; the body covered with a cold, clammy sweat; involuntary evacuations, and every appearance of impending death. In about half an hour from this time the convulsions ceased, having lasted twelve hours, with scarcely a minute's intermission between either general convulsions or spasmodic movements, and with no return of consciousness. The respiration now became better, and the skin warmer; the colour improved, and I was again sent for, to find that the patient had evidently passed this crisis, and that all alarming symptoms had disappeared. In the evening Dr. Betton met me again, and, thinking that there might be a spicula of bone wounding the dura mater (though, from the shape of the nail and force of the blow, this did not seem probable), we determined, should the symptoms warrant it, to trephine the patient in the morning, when we again met, and were joined in consultation by Dr. James Darrach.

We then ascertained that there had been no return of convulsions, that the patient was quite conscious and rational, his pulse and general appearance good, and that all his symptoms contraindicated surgical interference. Calomel and Tyson's antimonial powder, each gr. ¼, with gr. v nitrate of potassa, ordered to be taken every two hours—with ten drops of the deodorized tincture of opium to produce sleep and quiet when required. This treatment was continued for a day or two, the patient being at times a little restless, with occasional nausea, but no pain nor headache; the wound discharging a little yellow pus; no fever nor vascular excitement. He continued about in this condition for a week, his only medical treatment being occasional doses of the deodorized tincture of opium, with infusion of senna as a laxative; his diet was restricted to fruit, milk, barley-water, toast, &c.

Two weeks after the injury the patient complained of quite severe paroxysmal pain in the forehead and right temple, which gave him great uneasiness. For this we gave him bromide of potassium, gr. x every two hours, and applied chloroform and aconite to the forehead. The symptoms passed away in a few days, when he entered fairly into convalescence; his appetite became craving; the nausea disappeared; he slept well; there was no cerebral disturbance, and he appeared perfectly well, except for the small opening in the skull, which discharged daily a few drops of pus.

On the 10th of October, when at the house visiting another member of the family, I examined this patient carefully, and found that the wound in the scalp was completely cicatrized, and that everything about him in-

dedicated perfect mental and physical health; he had grown to be larger and heavier than before the accident, and his nutrition and apparent health were all that could be desired.

October 15 (a week more than four months from date of injury). T. C. awakened from a good night's sleep, with frontal headache and nausea, but in the afternoon he had a cool skin; pulse soft, and about 100; tongue clear, and bowels acting well; he did not *appear* to be seriously ill. The headache and vomiting continued, in spite of treatment, till Monday morning, October 18th, when he quietly and suddenly expired, without coma, convulsions, delirium, or any mental aberration whatever, being until within a minute or two of his death intelligent and rational.

A *post-mortem* examination was made in the presence of Drs. Betton and Lambdin, thirty-three hours after death, the head only being opened. The wound in the scalp had entirely cicatrized, though the cicatrix was not perfectly firm; its circumference was attached to the bone, the opening in which was oval and smooth, from three-sixteenths to one-fourth of an inch in each diameter. The inner table of the skull was no more injured than the outer. Upon removing the calvaria, the dura mater was found to be thickened and adherent to the bone, for a little distance around the opening, though there was no corresponding lesion in the membrane itself.

When the meninges were removed, we found the middle and posterior lobes of the right hemisphere softened to the consistence of thick cream, indeed nearly diffuent; a probe passed in the direction of the nail wound, entered an abscess at the depth of an inch and a half, which contained four ounces of greenish-yellow pus; there was no appearance of a membranous wall, the sides of the cavity being simply denser brain-structure. Almost the whole of the right hemisphere was so completely disorganized and softened, that it was impossible to trace any anatomical point with certainty; indeed, after emptying the abscess, the right brain was soaked up with sponges, and squeezed out.

The points in this history which seem worthy of special notice are—

1. The sudden onset of, and almost equally rapid recovery from, the terrible succession of convulsions on the sixth day;

2. The subsequent return of the boy to apparent health, without a solitary indication five days before his death that anything was the matter with him; and

3. His gain in weight and size; the regular manner in which his vital functions were conducted, and the total absence of headache, dizziness, or nausea, or of sensory or intellectual disturbance of any kind, while yet his brain was in the condition which has been described.

It is highly probable (though, from the disorganized state of the brain, the examination did not prove it) that the abscess had burst into one of the ventricles, an occurrence which is believed to be invariably and rapidly fatal.

A question of great clinical interest is as to the propriety of trephining in this boy's case; though my friends Drs. Betton and Darrach, as well as myself, were well aware that most surgical authorities advise the use of the trephine in punctured fractures of the skull, yet as we knew the depth to which the nail had penetrated, and that should suppuration take place at the bottom of the wound, as it probably would, we could not safely evacuate the pus, we concluded that it was better not to operate.

Dr. WILLIAM PEPPER recalled the fact that in most of the cases of abscess of the brain on record, it has been found that following the first period of excitement, which may be characterized by fever or convulsions,

there is a period of latency of variable duration, but usually continuing for several months, during which scarcely a symptom is present. This is strictly true in those cases in which the abscess has involved only the white substance of the brain, and none of the large ganglia at the base of the brain. So long as the disintegrating process does not involve the base of the brain, this may go on until it reduces the brain to a mere pulp without developing any distinct cerebral symptom, a result which is probably due to the fact that the opposite hemisphere, or that the remaining portion of the cortex on the injured side, is sufficient to supply the process of intellection, while there is no interruption to the transmission of motor impulses through the large ganglia at the base of the brain. But when this period of latency is concluded, it very generally happens that the patient dies from coma or by a sudden death resulting from the overwhelming shock occasioned by the escape of this fluid into the cavity of the ventricles.

Dr. JOHN ASHHURST, Jr. In regard to trephining for abscess of the brain, the great difficulty is that it is almost impossible to say positively what are the symptoms of cerebral suppuration. They resemble so closely those of meningitis, that it is very difficult for the surgeon to decide which condition is present. More than this, if the question of suppuration was settled, it would be almost impossible to tell whether the pus was near the surface or deep-seated. Although the operation has been occasionally successful, it is one which few surgeons would think justifiable, and which in a large majority of cases could certainly but hasten the fatal issue.

Dr. WILLIAM PEPPER. The remarks of Dr. Ashhurst touch upon two of the great difficulties which deter most surgeons from performing the operation. Where doubts exist as to the existence of suppuration and the position of the abscess, of course no prudent surgeon would operate; but there are many cases where the diagnosis can be made with considerable certainty. Where there is a local injury to direct attention to the probable seat of suppuration, and where the symptoms are developed in such a way as to render the diagnosis reasonably certain, it appears to me that the operation of trephining offers more chance of recovery than any other plan of treatment. In examining a number of cases where death has resulted from necrotic disease of the skull, and where pus had accumulated in large quantities between the skull and the dura mater or between the dura mater and the arachnoid, I have been forcibly impressed by the fact that, had the operation of trephining been performed, the evacuation of the abscess could not have failed to be followed by decided relief to the patient.

Dr. ASHHURST. The more I see of such cases, the more hesitation do I feel in making a positive diagnosis as to the actual condition of the brain. Even if we could open an abscess, we frequently could not evacuate the pus, for it would be too thick; and if we did evacuate a portion of the pus, we still could not prevent the abscess from emptying itself into the ventricle. The operation of trephining is in itself one of a very serious nature.

Dr. WILLIAM PEPPER. I do not wish to be understood as advocating the indiscriminate performance of trephining in cases of abscess of the brain. The class of cases in which the operation is recommended is chiefly that in which the abscess is probably superficial, generally where it is connected with disease of the bone which could be localized from the nature of the injury or from the actual existence of necrosis, and where we could reasonably hope to open the abscess without being obliged to enter the

brain-substance. In Dr. Downs's case, the operation could not have restored the healthy condition of the brain, but only have afforded temporary relief at best. In other cases, however, the operation would certainly remove the chief part of the trouble; and by keeping the wound open to allow the pus to discharge, I see no reason why there should not be a fair chance for considerable prolongation of life, and even recovery.

May 3. Operation for Supposed Ovarian Tumour.—Dr. PACKARD remarked, that he was reminded by Dr. Atlee's case (see number of this Journal for July, 1871, p. 157), of one which occurred to him in 1863, in which, however, the result was less favourable. It was that of an unmarried woman aged 21, the subject of an abdominal tumour, which caused at times acute pain, and which greatly impeded respiration. The swelling had first made its appearance about a year previously, just above the left groin, and presented the usual characters of a multilocular ovarian cyst; it seemed to be free from adhesions. Menstruation was more frequent than normal. The patient was otherwise in good health.

On the 21st of October, Dr. J. C. Morris, who was attending the case, introduced a trocar and canula at the upper part of the tumour in the median line, and drew off about a pint of slightly bloody serum. After careful consideration, Dr. A. Fricke, Dr. Morris, and myself, decided upon attempting ovariectomy, and did so on the 26th.

Anæsthesia having been induced, and the patient suitably placed on a strong table, I made an incision about four inches in length in the median line. The peritoneum bulged out so as to simulate intestine. Dividing it, I passed my hand in and felt around the tumour, which was very firm, but free anteriorly from adhesions. The incision was now extended upwards about four inches further.

Passing a large trocar into what was taken to be one of the cysts, I endeavoured to empty it, but no fluid escaped. On the withdrawal of the instrument, a copious flow of venous blood ensued, and from the character of the pierced tissue I was satisfied that it was that of the uterine wall. The wound was at once dilated, and the bleeding vessel secured.

It being now evident that the removal of the tumour was impracticable, we only waited for the hemorrhage to cease, and then closed the wound in the uterine wall by two silver-wire sutures. The incision through the abdominal parietes was brought together with harelip sutures and strips of isinglass plaster. Warm flannels were applied, and stimulus given.

For a day or two, morphia was freely given by the mouth, but as it caused nausea, it was discontinued, and opium suppositories employed instead. This symptom was very troublesome for about two weeks, although combated by means of iced drinks, effervescing draught, hydrocyanic acid, &c. Her pulse steadily but gradually rose, and the abdomen became extremely tympanitic; the swelling causing the long ends of the silver sutures, applied to the uterine wound, to disappear into the peritoneal cavity. The external wound did very well, only giving pain when she vomited. Some bloody discharge, supposed to be menstrual, took place from the vagina for several days after the operation. Her main source of suffering was from the embarrassment to her respiration, arising partly from flatulence, to allay which hot poultices were used with some benefit. She grew weaker and weaker, her pulse rising steadily, and her mind wandering at times. Two or three days before her death she rallied a little; began to eat with more appetite, seemed to gain strength, and

was quite rational. The improvement was but temporary, and on November 10th she died exhausted.

An *autopsy* was made nine hours after death. Abdomen only examined. The tumour was found free from adhesions, except one or two slight bands going to the intestines. Several large flakes of yellow lymph lay in the peritoneal cavity, but there was no liquid effusion. The wound in the uterus was wholly healed, without any sign of surrounding inflammation. The tumour, which was fibrous and solid, presented a most deceptive fluctuation; it seemed to have been developed from several centres, chiefly, perhaps, from the left ovary; a strong fibrous pedicle connected it with the upper and back part of the uterus. In the centre of one fibrous mass was what seemed to be a shrunken cyst. The whole tumour was judged to weigh thirteen or fourteen pounds, and filled up the cavity of the pelvis almost completely. The uterus was flattened out in front of it.

May 17. Results of Hip-joint Excision.—Dr. JOHN ASHHURST, Jr., exhibited a patient upon whom he had performed excision of the hip-joint for hip disease, at the Episcopal Hospital, in February, 1867. The early history of the case was fully reported in the second volume of the *Pennsylvania Hospital Reports*, and the patient was now introduced to show the final result of the operation. The sinuses, of which several existed at the time of the patient's leaving the hospital, were now entirely closed, and the wound had remained firmly healed for several months; the limb was very useful, the patient—now nearly ten years old—walking easily and rapidly, without support or assistance of any kind. The growth of the limb on which the excision had been performed had been very nearly equal to that of its fellow, the amount of shortening being at present not more than a quarter of an inch greater than the length of the portion of bone removed.

In connection with this case, Dr. Ashhurst exhibited also the head and neck of a femur removed by excision from a patient in the Children's Hospital, on account of advanced hip disease. The latter case was still under observation, but the specimen was shown as illustrating very well the change in the form of the bone which accompanies the ultimate stages of coxalgia, the neck of the femur having almost disappeared, and the head being reduced to a mere nodule of bone, by the persistence of caries and of long-continued suppuration. From an inspection of this specimen, it was easy to understand how the external appearances might lead to the supposition that a true dislocation had occurred, while yet dissection would show that the caput femoris, or what remained of it, was actually in the acetabulum.

With regard to the circumstances under which hip-joint excision should be performed, Dr. Ashhurst urged that the operation should be looked upon as a last resort, not to be employed as long as a reasonable prospect remained of saving life in any other way. The statistics of nearly four hundred recorded cases, to which he had references, showed, he thought, the operation to be one of such gravity that it ought not to be undertaken unless when its necessity was very evident, the mortality being in round numbers one-half of all terminated cases, and about one in three dying even at the most favourable age for operative interference. Should, however, excision be determined upon, Dr. Ashhurst urged that the removal of diseased bone should be as thorough as possible, no additional risk being entailed by such a course, while the period of convalescence would be materially shortened.

REVIEWS.

ART. XX.—*Ether and Chloroform.*

1. *Death from Chloroform.* Lectures in Medical Times and Gazette, London, May and July, 1870. By BENJ. W. RICHARDSON, M.D.
2. *Remarks on Anæsthetics.* The Boston Medical and Surgical Journal, February 13, 1868. By HENRY J. BIGELOW, M.D., Prof. of Surgery in Harvard Medical School, and Surgeon to Massachusetts General Hospital.
3. *A Handbook of Therapeutics.* By SYDNEY RINGER, M.D. New York, 1870. Arts. "Chloroform" and "Ether."
4. *Anæsthetics.* By EDWARD R. SQUIBB, M.D., of Brooklyn, N. Y. New York, 1871. Pamph. pp. 30.
5. *Chloroform Deaths.* Twelve unpublished Cases. By W. W. DAWSON, M.D., Surgeon to Cincinnati Hospital. 1871. Pamph. pp. 34.
6. *Report of a Committee of the Boston Society for Medical Improvement, on the alleged Dangers which accompany the Inhalation of the Vapor of Sulphuric Ether.* Boston, 1861. Pamph. pp. 36.
7. *The Relative Dangers of Anæsthesia by Chloroform and Ether.* From Statistics of 209,893 Cases. By E. ANDREWS, M.D., Professor of the Principles and Practice of Surgery in Chicago Medical College. Chicago, Ill., 1870. Pamph. pp. 12.
8. *A System of Surgery.* Edited by T. HOLMES, Esq. Second edition. Art. "Anæsthetics." By JOSEPH LISTER, Esq.

THE consideration of the comparative safety of ether and chloroform has provoked an extended controversy. The surgeons of Boston and other parts of the United States, of Lyons, France, and of Naples, Italy, still adhere to the early anæsthetic. But in Edinburgh, London, Paris, and other quarters, the fortunate circumstances under which chloroform was heralded into the world, and the high anticipations which were excited by its peculiar anæsthetic qualities, combined to cast ether quickly into the shade. And there are obvious reasons why such should have been the case. The wonderful and unexpected fact of a safe induction of the anæsthetic state having been established, the scientific world was now prepared for and awaited new developments. Ether was the pioneer into a new region, and had announced that the way was safe. Around its history were clustered all the inconveniences and discomforts which usually attend the introduction of a new process, and which were due not to the agent, but to the inexperience of those who invoked its aid. There was much to do.

The question of the most appropriate method of administration, whether by an inhaler or from a sponge, had to be decided, and during this period of experiment many imperfect results were naturally to be expected. The ether used was often impure, and surgeons had to find this out and learn how to purify it.

The symptoms of the anæsthetic state were to be observed, especially

those which portended danger. With all these disadvantages to contend against, no accident happened, if we except the case at Auxerre, in which ether was administered from an apparatus, "in a manner likely to produce asphyxia," and "insufficient means used for the restoration of the patient."¹ Referring to this case, Dr. Snow says "that death appeared to be occasioned by want of air, owing to an imperfect inhaler, and not to the effect of ether."

But chloroform found the way prepared, and men expectant and ready to greet it. The smallness of the quantity required to produce its effects, the ease with which the anæsthetic state was induced, and its pleasant odour, all conspired to cause exultation over the new substitute. Chloroform was established and its supremacy seemed assured. Scarcely had two months elapsed, however, when, after certain premonitions of danger, the public were startled from their fancied security by a "death from chloroform," undoubted and in no other way explicable. This occurred in January. A second death was recorded in February, another in March, and so on to this day has the ratio of mortality thus early assumed by chloroform not only held its own, but steadily increased, until the ominous record "death from chloroform" has become almost as familiar to medical journals as the titles they bear.

But, before proceeding further, the question of the mode of death presents itself. Since the first deaths from chloroform this question has been a fertile subject of discussion, and may now be considered far from settled.

All agree that this unfortunate result may occur in several ways. Without entering into a review of all the elaborate opinions which have been broached, we shall divide "death from chloroform" (considering first this agent) into two general classes: 1st, those occurring suddenly; and, 2d, those occurring gradually.

A large proportion of cases range themselves under the former class. The words² applied to a recent case, "the patient was yet only partially under the influence of the anæsthetic when death suddenly took place," will suggest themselves as the long familiar description associated with the record of chloroform deaths. Of the 109 cases³ reported by the Committee on Chloroform to the Medico-Chirurgical Society, London—

Before full effect of chloroform	50 died.
During effect of chloroform	52 "
Not stated	7 "

109

Out of 27 deaths which occurred within ten minutes, fifteen took place in less than two minutes.⁴

Referring to these cases, Sansom⁵ says: "The first and most frequent is sudden death at the early stage of its [chloroform] influence."

Various explanations of these rapid deaths have been advanced. It is common, in order to remove the stigma from the agent employed, to say they are caused by fear or by an idiosyncrasy of the patient; but there is a much more obvious explanation, though neglected to a great extent by

¹ Exposition et Histoire des principales Découvertes scientifiques modernes, par Louis Figuier, Paris, 1851, t. ii. p. 282. Gaz. Médicale, 4 Mars, 1848, p. 170.

² Boston Med. and Surg. Journal, Feb. 17, 1870, quoted from Brit. Med. Journal.

³ Sansom, p. 68, quoted from Am. Journ. of Med. Sciences, Jan. 1867, p. 165.

⁴ Boston Rep., p. 10, quoted from Brit. Med. Journ. of Feb. 21, 1857.

⁵ Am. Journ. Med. Sciences, Jan. 1867.

writers on these subjects—namely, the effect of a sudden impression upon the peripheral distribution of the vagus in the lungs, or, in other words, “shock.”

Dr. Henry J. Bigelow early recognized this fact. In 1848 he described¹ such deaths as due to “the sudden impression upon the system of a powerful inebriating agent.”

This mode of death has, we believe, nowhere received more able and extended consideration than in a recent number of this Journal, where Brown-Séquard is quoted as follows: “It is by the reflex influence due to the sudden irritation of the branches of the par vagum in the lung, that chloroform has killed in the very rare cases in which the heart’s action has been stopped before the respiration.”

Dr. Benj. Richardson² has recently further elucidated the same idea. He quotes from a paper of Dr. Rutherford’s,³ “On the Influence of the Vagus upon the Vascular System.” Dr. Rutherford writes:—

“If any irritating vapour be brought before the nose of a rabbit, it instantly closes its nostrils and ceases to breathe, often for thirty or forty seconds. Within three seconds after the cessation of respiration the heart comes almost to a standstill, and continues to beat very slowly until respiration be re-established.

“The arrest of the heart is due to stimulation of the inferior branch of the vagus by the asphyxiated condition of the blood, for the slowing of the heart does not set in until death approach, if the vagi have been previously divided.”

From this it appears that death has resulted from the action of the vapour upon the “nervous periphery of the breathing surfaces.” The breathing ceases, and the vagus, stimulated by the asphyxiated blood, causes the heart also to stop beating.

Dr. Richardson thus arrives at the same result, namely, a sudden paralysis of the heart, by introducing as an intermediate step the asphyxiation of the blood. It also appears, according to Dr. R., that sudden death may be caused in another way. The arterioles of the lung, irritated by the vapour, suddenly contract, and the right heart is instantly paralyzed from the pressure of inflowing blood which can find no exit.

But whatever the explanation, the fact seems established that chloroform vapour is strongly irritant to the pulmonary surface, and to this may be attributed the occurrence of many of the sudden deaths.

Probably deaths not sudden, but produced by degrees, are caused either by asphyxia or syncope.

The state of asphyxia is determined either by a loss of motor power of respiration from the action of the anæsthetic upon the medulla oblongata, or from a congested state of the lungs, themselves due to disease in those organs.

Syncope is believed to result from the direct action of the anæsthetic upon the heart (or more explicitly the cardiac ganglia), or, as described under sudden deaths, may be the result of reflex action. Paralysis of the heart seems to be the most frequent cause of death.

Dr. Austie says: “From the fact that in the immense majority of reported fatal cases, the first symptom of danger was confessedly the failure of the pulse and the blanching of the countenance, the conclusion appears strongly indicated that paralysis of the heart is the source of danger in

¹ Trans. Am. Med. Assoc., 1848, vol. i, p. 213.

² Med. Times and Gaz., May 28, 1870, p. 574.

³ Journal of Anat. and Physiol., May, 1869.

surgical chloroform narcosis." M. Perrin and other eminent authorities hold the same belief.

But the heart is not always the weak point, and there seems to be a percentage of chloroform deaths in which the respiration is the first to fail. Opinion varies much as to the number. It is asserted that in many instances the only evidence that the heart has ceased to beat is the failure of the pulse at the wrist, and that this test is fallacious, because though the radial impulse may be absent, the heart may still be beating feebly.

In support of death by the lungs, we refer to the eminent authority of Mr. Lister.

Mr. Lister, after admitting the possibility of death from syncope, and referring to death from the shock of the operation, "the administration being insufficient to cause complete anæsthesia," then says, "the greater number of deaths still remain unaccounted for," . . . and "their explanation will, I believe, be found in an overdose of this potent narcotic from too long continued administration." The effect of an overdose is "strongly stertorous breathing," which "will become aggravated till it passes into complete obstruction to the entrance of air into the chest, though the respiratory movements of the thoracic walls still continue."

The patient is now "placed in imminent peril" from asphyxia, and Mr. Lister immediately puts in practice a process which he has for many years strongly insisted upon, viz., to seize the tip of the tongue with a pair of artery-forceps and draw it firmly forward, when "the respiration at once proceeds with perfect freedom, the incipient lividity of the face is dispelled, and all is well."

We are now prepared for the general statement that "the very prevalent opinion that the pulse is the most important symptom in the administration of chloroform, is certainly a most serious mistake. As a general rule, the safety of the patient will be most promoted by disregarding it altogether, so that the attention may be devoted almost exclusively to the breathing."

These directions Mr. Lister considers all-sufficient, and so obvious that both extensive experience and methods of administration other than on the simple folded cloth are unnecessary. (Mr. Lister thinks that the quantity of chloroform vapour given off from the under surface of the cloth is "below Dr. Snow's limit of perfect security," 4 to 5 p. c.) The danger of chloroform "is so small that it need not enter seriously into our calculations," and just as railway accidents are occasioned by culpable mismanagement, so death from chloroform is almost invariably due to faulty administration."

It would certainly be a great point gained if the vital defect of chloroformization could be thus definitely settled and the responsibility shifted to administrators. But it must be remembered that the frequent deaths associated with this very method of administration have been the incentive to the invention of numerous complicated apparatuses to regulate the quantity of vapour inspired, and that the explanation of death by an overdose does not account for a very large proportion of deaths which it is well known are sudden, before the full anæsthetic effect and before the operation has commenced, and when but a trifling amount of chloroform has yet been given. We should not like to agree with Mr. Lister, that death from chloroform is chargeable to the administrator and due to "culpable mismanagement," for it is known that five deaths¹ under the method of the folded cloth

¹ British Medical Journal, June 17, 1871.

have occurred at the Edinburgh Infirmary. And just before his death the introducer of chloroform himself had occasion to lament the occurrence, at the same institution, of a most typical case of death from chloroform administered by his own hands, and from the folded cloth or lint.¹

However, we agree with Mr. Lister that his method is the best; for Clover's inhaler, the most nearly perfect of all the apparatuses, has had a large share of victims, and where all methods kill, the simplest is undoubtedly the best. And, on the whole, if chloroform is to be used at all, nothing can be more admirable than the clear and simple directions given by Mr. Lister for its employment. His instructions reduce the process of chloroformization to its simplest terms, but necessarily, as we believe, leave unprovided for the unpreventable and unmanageable toxic influence of the drug.

Deaths from apnœa, ordinarily referred to paralysis of the muscles of respiration, have also received another ingenious and plausible explanation,² viz., direct local anæsthesia of the lungs, owing to which these organs become insensible to the presence of carbonic acid, and thus fail to transmit to the respiratory centres the necessary stimulus to respiration.

A sudden death from the effects of ether has never been recorded.

A gradual death can be produced in two ways: 1st, by cutting off the proper supply of atmospheric air with inhalers and undiluted vapour; or 2d, by prolonging the inhalation beyond the stage of deep narcotism, until the medulla oblongata is paralyzed and respiration abolished, followed shortly by cessation of the heart's action.

In both cases the fatal result is due to asphyxia. During the anæsthetic process the whole nervous system is not affected at once, but different parts successively succumb. The nervous centres which control involuntary and semi-voluntary action are the last to yield, but it is evident that if the inhalation be sufficiently prolonged, these too at last become involved, and life ceases. The heart is then the *ultimum moriens*. The question of liability to death of this nature from ether will be discussed later.

Both the public and the profession early recognized the dangers of chloroformization. Among the first to take a decided stand against it were the surgeons of Boston.

Dr. John C. Warren wrote at length against the use of chloroform. Dr. Geo. Hayward, in a pamphlet³ published in 1850, says, after adducing other objections to chloroform, "but there is a stronger ground on which we can rest our opposition to the use of chloroform, that is its danger to life; it cannot be denied that fatal effects have followed its inhalation when administered by the most judicious hands."

Dr. Henry J. Bigelow, one of the very earliest advocates of ether, thus concisely expresses his opinion in tabular form:—

¹ British Medical Journal, July 2, 1870.

² "On one of the Causes of Death from Chloroform." By Andrew H. Smith, M.D., of New York. N. Y. Med. Journ., July, 1871.

³ Comparative Value of the Different Anæsthetic Agents, by Dr. Geo. Hayward, Boston, 1856, p. 9.

	Conveniences.	Inconveniences.	Dangers.
Ether.....	.....	Pervading smell	Little.
Chloroform	More portable, and less of it answers the purpose.	Blisters skin unless the face is thoroughly oiled.	It kills people.

Surgeons abroad, especially in France, were not behind in their expressions of apprehension.

M. Malgaigne, in his report on chloroform to the Academy of Medicine of Paris, arrived at the following conclusion: "Chloroform possesses a toxic action peculiar to itself, which has been taken advantage of in medicine, by arresting it at the period of insensibility; which action, however, may, by being too much prolonged, cause death."

Subsequent experience has confirmed the opinion of Malgaigne, and it has become painfully evident that it is not always possible to arrest this inherent poisonous action with sufficient accuracy to avoid causing death.

The question was seriously proposed¹ in 1859, before the "*Société de Chirurgie*," of Paris, by M. Hervez de Chégoin, referring to chloroform, "whether its use had not better be actually suspended, until some method of using it with constant security shall be discovered, or, if it is to remain of so uncertain safety, even renounced altogether."

In 1857, Ricord, before the Academy of Medicine, spoke of the use of chloroform as "an accident which complicated an operation."

Mr. Erichsen, of London, says² of the stage of insensibility induced by chloroform "when thus fully anæsthetized, the patient is, undoubtedly, on the very verge of death."

In 1850, Petrequin, a distinguished surgeon of Lyons, writes,³ "from the day when I saw chloroform in the hands of the most skilful practitioners cause successive and numerous lamented victims, I became convinced that I ought to reject far from me a poison of a character so subtle, that frequently what should have been an ordinary sleep became, with the rapidity of lightning, the sleep of death; and for which science knew no antidote."

There has been nothing in the subsequent history of chloroform inhalation to contradict the conviction of danger which had thus early become associated with its use.

On the contrary, its dangers are by many freely admitted, and the comparative safety of ether allowed. A wide-spread feeling of uneasiness, having its origin in the constantly recurring and seemingly unavoidable fatal results which, year by year, certainly and surely congregate around chloroform, is now agitating the British mind. Dr. Benjamin W. Richardson, than whom there seems to be no one more familiar with the special study of anæsthetics, says "there is, under the most favourable aspect of chloroform, a given mortality, just as there is a mortality from accidents and acute diseases like fevers."

Dr. Kidd states, "This school [London] would have it that there is always a certain number of deaths, and must be. *This is the pervading*

¹ Séance du 9 Mai, 1859.

² Erichsen's Surgery, p. 44.

³ Gazette Hebdomadaire de Méd. et de Chirurg., 12 Janvier, 1866, p. 21.

impression now in London." And, again, he laments "this confusion of ideas that exists in the English mind as to the readiness with which chloroform acts and kills." He continues, "as a rule of nearly 400 accidents from chloroform, the patients were in rude health."

Physicians and the newspapers have hitherto retained the almost exclusive right of discussing the "deaths from chloroform," while courts of justice have deferred to the opinion of the physician. That the "medico-legal bearings of chloroform" may assume a new shape is suggested by a recent coroner's verdict of "death from the effects of chloroform administered without proper degree of care," "in fact, a verdict of manslaughter," says the *Medical Times and Gazette*, from which this is quoted. It does not appear from the account given, that this administration was conducted in an unusual manner, and, in defending the administrator, the *Times* says further, that death from chloroform is "*an accident which is by no means very uncommon, which has happened to the most experienced surgeons and chloroformists, and which no skill and no precautionary measures could prevent.*"

What more complete and unqualified admission of the dangers of chloroform than this could there be, coming as it does from the very advocates of chloroform themselves?

But to ascertain the exact number of fatal results, or what is more desirable still, the number of deaths relative to the administrations, has always been found a difficult task. One undoubted death from chloroform which would not occur from ether under similar circumstances, should be enough to decide the question of their relative merits. But many have occurred, well proven, of immediate death, at the very beginning of chloroform inhalation. And there is not on record a death from ether of this description. And this fact alone would be sufficient to ground the conclusion that ether was the safer anæsthetic, and therefore always to be preferred to chloroform. It is well known, moreover, that many deaths go unrecorded, owing to the reluctance of the operator to have this stigma attached to his reputation. At a recent meeting of the British Medical Association, Dr. Hughes Bennett remarked that "there were many deaths from chloroform that were never published," and after relating a sad case of the kind, he closed his remarks by saying that "this was only one of many similar cases that had occurred, but had never been published." Dr. Andrews says, "Physicians resident in Paris inform me that only about half of the known deaths from anæsthesia (only chloroform is used there) appear in print in that city, while in England and in this country probably not one-fifth part are ever published."

Dr. Richardson believes that cases occur constantly which are not recorded.

We present such statistics relating to the number of "deaths from chloroform," as we have been able to secure, premising that they are very imperfect.

In the *British Medical Journal* of July 2d, 1870, is a "Table of deaths from chloroform in the United Kingdom during the last eighteen months." From this it appears that in 1869 eleven deaths occurred, and up to May in 1870, six, nearly all of them in hospitals, and thus necessarily reported. This number of cases (11) nearly corresponds with the annual average as ascertained from the tables of the Registrar-General of England.

It will be noticed in the table given below, that a very small number of

cases were registered for the five years ending 1856, viz., 13. Referring to this fact, the Registrar-General says that "perhaps the cause of death in the former period may not have been so well recorded as in later years." No record was kept for the years between 1856 and 1863.

TABLE ABRIDGED.—*England. Deaths Registered from Chloroform in the Years 1852-56, 1863-68.*

Years.	Total number of deaths.						
5 years. 1852-56.	13
1863	10
1864	9
1865	12
1866	7
1867	7
1868	14
Total	70

Annual average from 1863 to 1868, five years, 9.5.

Apply this average to the twenty-three years which have elapsed since the introduction of chloroform, and we obtain a total of 218.5 deaths from chloroform in Great Britain alone.

Dr. Snow, in 1858, by a most vigorous system of exclusion of doubtful cases, had recorded fifty deaths. In 1865, Dr. Sanson had collected the records of fifty more, making 106 to that date. The committee on chloroform in their report to the Royal Medical and Chirurgical Society give 109. Kidd, as quoted, gives 400. Perrin and Sabarth each chronicle about 200. But here, in our first attempts to obtain the ratio of mortality from chloroform, the data fail. The estimates of the actual number are made by chloroformists, and are restricted to their narrowest possible limits. Let any one familiar with the medical literature of journals and magazines consider if he cannot recall more than nine deaths per annum, and he will convince himself that "the half has not been told."

During the year 1869, for which the *British Medical Journal* gives eleven deaths occurring in Great Britain alone, the *Medical News and Library*, published in Philadelphia, recorded twenty-five.

In a late number of the *Practitioner*, edited by Dr. Austie, of London, Dr. Augustus Waller, a distinguished physiologist, lately deceased, writes as follows: "The administration of chloroform in the most skilful hands, and while surrounded by all the appliances of hospital practice, is still undeniably attended with a certain amount of danger." . . . "So much is this the case, that, as Dr. Prevost pointed out to me, there were three fatal cases from chloroform within a few days' interval, in the different hospitals of Paris, where it was administered for the purpose of reducing dislocation of the head of the humerus."

If throughout the rest of the world the whole number of chloroform deaths has equalled those occurring in Great Britain, as estimated from the annual average of the Registrar-General, namely 218, the estimate of Kidd of 400, will be none too small. As late as 1869, an editorial of the *British Medical Journal* says: "We have had deaths from chloroform almost every week." Dr. Dawson writes: "Since October last, the date of my unfortunate case, I have collected, with but little trouble, the history of twelve hitherto unpublished cases, most of them having occurred in this vicinity." In fact, we believe that few even dream of the magnitude of the

number that chloroform has killed. However, the low estimates of chloroformists, given above, show that the number of killed is greater than by any other drug of the *Materia Medica*.

There have been a number of estimates of the ratio of mortality. Of these, two bear upon their faces evidences of inaccuracy, but are nevertheless very generally quoted. In 1859, Dr. Chapman estimated that chloroform had been administered throughout the world 1,200,000 times, and collecting 74 deaths, he calculated that the ratio of death was as 1 to 16,000 administrations. Dr. Sabarth estimated that the number of administrations for fourteen years, had been 3,000,000, and collecting 119 cases of death, he estimated that the mortality was as 1 to 26,000.

The sources of error in these estimates—first, the impossibility of approximating to the whole number of administrations, and second, the difficulty of ascertaining the actual number of deaths—render the calculations too rude to be relied upon.

Two other calculations, of Dr. E. Andrews,¹ of Chicago, and of Dr. Benjamin W. Richardson,² of London, give estimates differing from the two already quoted, as much in accuracy of method as in the proportion of deaths to administrations. Dr. Andrews, from the data of 117,078 known administrations, and 43 recorded deaths among this number, computes the deaths to be as 1 to 2723 administrations. Most singularly, Dr. Richardson's estimate led him to adopt nearly the same ratio. He found "that in the twenty-one years from 1848 to 1869 inclusive, in thirteen hospitals there were 35,162 administrations of chloroform, with a proportion of eleven deaths." He "believes this to be the largest reliable series of cases of administration as yet collected," and "knows it to be just." "Doubtful cases of death from the agent there were none, and in every case a qualified and competent practitioner was the administrator." Dr. R. continues: "I compute favourably from the facts that the rate of mortality is as 1 in 3500 administrations of chloroform (I really think it is greater, and that one death in 2000 to 2500 administrations would be nearer the truth)."

Dr. Squibb, in his excellent pamphlet, makes the only estimate we have seen of the ratio of deaths to administrations of chloroform, applicable to this country. With every facility for accuracy as to the amount of chloroform manufactured annually, he states it to be 80,000 pounds. This and the annual number of deaths reported make up the data of an estimate which he frankly states "*is simple speculation or rough estimate.*" Supposing one-third of 80,000 pounds, or say 26,000 pounds, is used for anæsthetic purposes by inhalation, and that one and a half fluidounce is used and wasted for each administration, "this would give $26,000 \times 8 = 208,000$, or say 200,000 administrations," a very extravagantly safe estimate for the whole country during 1870. Dr. Squibb finds 17 deaths recorded for this year. Thus the ratio of deaths is as 1 to 11,764 administrations. But since "some estimate that not more than one-half of chloroform deaths are ever publicly known," Dr. S. doubles the recorded cases, and adopts for safety the ratio of 1 to 5882, though he "believes the first estimate to be nearest the truth."

We would suggest that since a large proportion of anæsthesias throughout the United States are induced by ether, and many in dental practice by nitrous oxide, that 100,000 annual administrations of chloroform is

¹ The Relative Dangers of Anæsthesia, p. 7.

² London Medical Times and Gazette, July, 1870.

large enough. This number, with the number of deaths quoted above, would give a ratio of 1 to 3000, about the same ratio as that of Dr. Andrews and Dr. Richardson.

Deaths associated with the administration of ether have undoubtedly occurred; we say "associated with the administration of ether" advisedly, for the opinion is now very widely held that a death resulting from any noxious quality inherent in this agent is not recorded. No one doubts, we believe, that death can be produced by administering the vapour of ether undiluted with atmospheric air, and by prolonging the administration until the patient is dead.¹ But plainly death is due not to the agent, but to the method of exhibiting it. Numerous drugs of the *Materia Medica* can be given either in therapeutic or toxic doses. So with ether. But between the two agents there is this difference. *With ether, the possibility of taking life rests with the administrator: he can kill with it, but there exists no inherent necessity of doing so; nor is it probable that signs of danger can escape his notice. With chloroform, having decided to use it, the possibility of causing death is beyond human skill or foresight.* Dr. Snow, after careful attention to ether administration, writes: "I hold it almost impossible that a death from ether can occur in the hands of a medical man who is applying it with ordinary intelligence and attention."

In Boston, where ether was first introduced and used exclusively now for over twenty years, no well-authenticated case of death has ever occurred or been heard of in the vicinity from it. Throughout the United States, anæsthesias, except for extraction of teeth, are about equally divided between ether and chloroform, but deaths from anæsthetics are almost invariably recorded in connection with chloroform administrations.

In attempting to determine the number of deaths connected with ether, we are very materially aided by the labours of the "Boston Committee," whose report embraces the results of most patient research and accurate knowledge. This committee was able to obtain the records of only forty-one cases of death thought to be attributable to ether. But this formidable number faded rapidly when subjected to the light of investigation. Every one of these cases was rejected by the committee. It was found that 6 of them had occurred in from 11 to 16 days after the operation, 9 in from 3 to 6 days, others in from 3 to 50 hours, leaving but 8 which occurred during the operation or inhalation, and 8 in which the time which elapsed was not stated. Of these 16 cases, the committee think "that the connection between the result and the inhalation is either problematical or else manifestly absurd and unfounded, except in four instances where it was due to asphyxia brought about by wholly avoidable causes."

The conclusions of the committee have, we believe, never been rebutted, and there is good reason to believe that every year's experience with anæsthetic agents is strengthening their position. The importance of these conclusions must be our excuse for quoting them in part.

1. "The ultimate effects of all anæsthetics show that they are depressing agents. No anæsthetic should, therefore, be used carelessly, nor can it be administered without risk by an incompetent person."

2. "It is now widely conceded, both in this country and Europe, that sulphuric ether is safer than any other anæsthetic, and this conviction is gradually gaining ground."

3. "Proper precautions being taken, sulphuric ether will produce entire insensibility in all cases, and no anæsthetic requires so few precautions in its use."

¹ See case in Boston Med. and Surg. Journ., Dec. 8, 1870.

4. "There is no recorded case of death, known to the committee, attributed to sulphuric ether, which cannot be explained on some other ground equally plausible, or in which, if it were possible to repeat the experiment, insensibility could not have been produced and death avoided. This cannot be said of chloroform."

Dr. Andrews, whose rate of mortality by chloroform has already been quoted, collected also 92,815 administrations of ether, with four deaths, or 1 in 23,000. But a further examination of these instances of death brings to light facts and evidence not quoted in Dr. A.'s pamphlet.

Of the four cases cited, two are from the well-known Lyons series, and have been fully discussed by the medical society of that city, whose decision, given elsewhere, does not bear out Dr. A.'s opinion that these were veritable deaths from ether. One case was the excision of the superior maxilla, and Dr. Andrews certainly could not have been aware that in this instance the question of death from hemorrhage was seriously entertained, and that finally the society voted that the ether took but a secondary share in producing death ("*l'ether n'a joué qu'un rôle secondaire*"). Of the other Lyons case, Dr. A. omits to mention that it was a serious and long operation, and that the patient so far revived as to *take* "restoratives." And further, M. Gayet, the reporter, explains at length that the ether was not the only factor in producing a fatal result.

The third of Dr. Andrews' cases occurred at the New York Hospital, and was also an excision of the superior maxilla. It is well known that in performing this operation the greatest precaution is required to prevent death from suffocation produced by the unavoidable entrance of blood into the trachea, and so great and real is this danger, that in the practice of many surgeons the first step in the operation is tracheotomy. The same danger of death by suffocation applies to the first Lyons case already alluded to. Finally, as to Dr. Andrews' fourth case, he simply says: "One case of death is reported to me verbally by the officers of St. Thomas's Hospital, London. I could not learn the particulars." We think that this case should not be accepted until the details of the operation were furnished. Cases of this kind could, of course, be multiplied. For instance, but recently, a late student of University College, London, informs us, that during his attendance at St. Thomas's Hospital, he, in common with the medical class, *saw* three deaths from chloroform occur on the operating tables of that institution.

Dr. Andrews' pamphlet is a valuable addition to the literature of ether and chloroform statistically considered, and is evidently the fruit of much labour. We must, however, wait for better proven cases before abandoning the position taken by the committee of the "Boston Society," that there has not yet been recorded a case of death fairly attributable to ether. And we see no reason to reject the spirit of the Lyons Society's conclusions. However, according to Dr. Andrews' estimate, chloroform is eight and a half times as dangerous as ether.

The surgeons of Lyons, France, like most other continental surgeons, received with enthusiasm the new anæsthetic, chloroform. But a series of fatalities soon occurring under its use, by formal vote of their Academy of Medicine they again adopted ether.

And the result has been most satisfactory, if we may judge by the words of M. Petrequin, one of the ablest advocates of ether abroad. He writes:—

"During the fourteen years which have elapsed since chloroform was abandoned at Lyons and ether came into general use, we have not been called upon

to deplore the death of a single victim in the hospital practice where, in less than two years, five or six deaths from chloroform have occurred.

"After many sittings devoted to a profound discussion, the Society of Medicine of Lyons voted *unanimously* the following conclusions :"¹

1. "Ether employed to produce surgical anæsthesia is less dangerous than chloroform."

2. "Anæsthesia is produced as certainly and as efficiently by ether as by chloroform."

3. "If ether offers inconveniences which chloroform does not present to the same degree, these inconveniences are of little importance, and do not counter-balance the inherent danger of the latter agent."

4. "Consequently ether should be used in preference to chloroform."

In 1868 the Medical Society of Lyons, influenced by the occurrence of a death during etherization, again appointed a committee to examine the relative dangers of ether and chloroform, and this committee came to the same conclusions as before. We quote the 4th, 5th, and 6th :—

4. "Of the seven cases (since 1847), five relate to patients severely attacked (profondement atteints), and the two others were patients in special conditions—pregnancy in the one and hystero-neuropathy in the other."

5. "In none of these cases was death so sudden as it often is from chloroform."

6. "Ether may, indeed, cause death, but it is far less dangerous than chloroform."²

From the facts stated, and from further considerations, which the necessary limits of a review compel us to curtail, we come to these conclusions :—

Historical.—1. Ether preceded chloroform by over a year, and answered every purpose of an anæsthetic.

Physiological Action.—2. From the study of the direct action of ether and chloroform upon the tissues, no differences are established.

From the study of the phenomena indicative of the action of ether and chloroform upon the tissues, several differences of importance in favour ether are established.

- (a.) The excitement alleged to accompany the use of ether is proved to be exaggerated, and to be really but little more than accompany the use of chloroform.
- (b.) The heart is conclusively shown to be depressed in its action by chloroform—stimulated or at least not depressed by ether. From which is deduced the surgical point, that in a state of collapse ether is the best agent to use.
- (c.) Pupil, no differences elicited.
- (d.) Vomiting, in favour of ether.
- (e.) Death, from the opinions of scientific men and societies, and particularly from a comparison of the physiological action of both agents, we feel justified in saying that—
 - (a.) Death from chloroform is possible, is probable, and more, in a definite percentage of cases, is necessary and unavoidable.
 - (b.) Death from ether is possible, is not probable, and need never occur.

This disposes of the question of safety as pertaining to ether and chloroform; and here, at the very point where the discovery of anæsthesia hung in abeyance for so many years—a point so vital, that until its demands were satisfied no discovery could be made—chloroform fails.

In those quarters of the world where ether is in use, the settled conviction

¹ Gaz. Hebdomadaire, 12 Janvier, 1866, p. 25 and 24.

² Boston Med. and Surg. Journ., Feb. 6, 1868.

tion of its safety, entertained by all concerned, is noticeable. Any one, as it happens, etherizes. The operation goes on with scarcely a thought of the patient, for every one feels that, with the most ordinary attention, signs of danger are noticed long before they become urgent. If necessary, the patient is often kept for hours under the influence of the anæsthetic, and it seldom becomes necessary to appeal to any means of resuscitation. Lastly, the patient, after a long operation, "is put to bed with a flushed face and great surface circulation."¹

If we can judge by chloroform literature, the scene is quite a different one when that agent is employed. Administrators are instructed² to be always on the lookout for danger.

"A point which must be kept constantly in mind by chloroform administrators is, that no case is safe. It is just when danger is least thought of, that it comes." And it is a fact, that a constant dread of a fatal result does exist.

Conscious of this death-dealing property of chloroform, European surgeons have surrounded its use with every possible safeguard.

In the large hospitals, trained assistants only administer the drug, so that a professional chloroformist is a necessary part of the hospital staff. All the means of resuscitation are kept close at hand. And a most extended literature on the subject of recovering the patient has sprung up.

It is indeed of the highest credit to European, especially British chloroformists, that by their extreme precautions and solicitude for the safety of their patients, they have drawn almost from out the grave many who would otherwise have fallen victims to this deadly agent.

The necessity of the intervention of art to save the patient has become of common occurrence, and the resuscitated to-day outnumber the killed.³

But the latter class already is numbered by hundreds. Unerring statistics, at their lowest estimate, proclaim that the monument to the slain has risen higher and higher each year, and must continue to rise. Human skill and ingenuity have already been taxed to their utmost to make a poison safe. The voices of men highest in their profession are being continually raised to proclaim its danger. And yet, in the face of all this, we are told that the preference must be given to chloroform.

"So far as we have yet gone, it seems very probable that chloroform will hold its place with the British profession as being the safest anæsthetic which combines the recommendations of durable effect, rapidity of influence, suitability to all ages and states of health, freedom from after-consequences, and ease of administration."⁴

And in this brief sentence, which is but one of many quotations which might be cited to the same effect, we are told why chloroform must hold its place. We decline to accept such statements as final. We have shown, as we believe, that ether is safer, and we shall, we trust, make it evident that this agent combines with its use as fully as does chloroform every essential and necessary qualification of an anæsthetic. Let us pass briefly in review some of the disadvantages most frequently charged to ether. These are: Time necessary to produce anæsthesia; durability or persistency of anæsthetic effect; quantity of the agent required; certainty of

¹ Boston Med. and Surg. Journ., Sept. 29, 1870, p. 207.

² British Med. Journ., editorial, Nov. 27, 1869.

³ Out of 3058 administrations of chloroform by Dr. Anstie, alarming symptoms occurred in 21, or about 1 in 145. On Stimulants and Narcotics, p. 377.

⁴ British Medical Journal, November 27, 1869.

action; suitability to all ages and states of health; agreeableness to patient.

Time.—Chloroform anæsthetizes rapidly, but this very rapidity is an element of danger, for it is acknowledged that the sudden and overwhelming impression upon the nervous system has been the most frequent cause of chloroform death. Evidently, then, chloroform anæsthesia must be induced gradually and slowly, a point which is recognized by the invention and use of inhalers to prevent the undue and early action of the vapour. With Clover's inhaler, four minutes at least is required to produce anæsthesia. Ether anæsthetizes slowly, and it is essential to present its vapour to the system in a state sufficiently concentrated. Etherization must be hastened to be successful; chloroformization must be retarded to be safe. Dr. Snow states that the average time of etherization for adults is from four to five minutes, and all administrators agree in estimating the time at from four to six minutes. Thus ether in this respect differs but little, if at all, from the necessarily delayed use of its potent rival.

Dr. Squibb says: "When properly managed, ether, if not quite as prompt as chloroform, is as prompt as any anæsthetic can be to be safe." And Dr. Austie writes,¹ "Chloroform cannot be given safely with greater rapidity than ether."

Durability or Persistency of Effect.—The insensibility of ether anæsthesia is more permanent than that of chloroform. But the contrary has been so often asserted, that it is well to dwell a moment upon this point. Ether is far more soluble in the serum of the blood, and is retained in the blood and tissues longer than chloroform. Consequently its action is of longer continuance. Dr. Snow especially noted this; he says:² "On account of this longer duration of the effects of ether, it is better adapted for certain operations on the face, as removal of tumours of the jaws, the operation of harelip, and making a new nose." And bearing upon the same point, Dr. Austie says:³ "Chloroform, which speedily anæsthetizes, speedily leaves the organism free; ether, which is slower in its operation, more slowly ceases to act."

Quantity.—The quantity of ether required to produce a single anæsthesia is large when compared with chloroform. Four fluidounces will often suffice for an ordinary operation, but frequently as much as eight or ten are required. By the use of an inhaler, such as proposed by Dr. Squibb or Dr. Lente, the quantity required becomes very much smaller. When a sponge is employed, as is generally the custom, several ounces are turned freely upon it, and it is then closely applied to the face; and if lividity, or a certain rigidity of the muscles sometimes noticed, supervene, a few breaths of fresh air will immediately banish these symptoms, and anæsthesia will then follow with more than the usual rapidity.

But the ratio between the amounts of ether and chloroform required to procure insensibility is not preserved if it becomes necessary to prolong the operation, for the blood once saturated with the former, retains it longer than it does the latter, and a small additional amount serves to maintain insensibility. But the question of amount is really of minor importance in civil practice. In the campaign, the consideration of bulk becomes of more importance.

No discussion can be needed upon the question of certainty, for the as-

¹ Stimulants and Narcotics, p. 227.

² "On Anæsthetics," p. 361.

Stimulants and Narcotics, p. 469.

sections that ether is less certain in its action than chloroform, must arise from total unfamiliarity with its use, or from intentional misrepresentation.

And as to suitability to all ages, and applicability to all states of health, the same rules apply to both agents. Freedom from after-consequences refers particularly to vomiting, which, however, follows chloroform full as often as it does ether, and sometimes with more disastrous effect. Undoubtedly, the odour of ether is not so agreeable as that of chloroform. But considered not in comparison with chloroform, but by itself, this odour is not unpleasant to very many. And admitting this objection to ether in its full force, it is at best trivial, and not an objection so much urged by patients as by administrators.

As bearing directly and with great force upon the points under discussion, we cannot forbear quoting from the words of Dr. Henry J. Bigelow:¹—

“The great objection to ether is its odour; to chloroform, its danger: although few people hesitate to encounter as great danger to life in a long journey by sea or land. To such the danger of chloroform might not be an objection to its use, were it not that ether is perfectly safe and offers a ready alternative. When chloroform kills, the only warning it gives is the death of the patient, who dies suddenly by shock, and in spite of precautions. With ether no such accident is possible; its effects may be readily and perfectly graduated, its danger foreseen and easily averted. . . . There is no difference whatever in the nausea or vomiting produced by the one or the other, nor in the subsequent aversion to either anæsthetic of patients once thus made sick, nor in the character nor degree of other unpleasant symptoms, danger excepted; and the sooner these facts are wholly recognized, the better for the absolute safety of the patient, as preference will then be given to ether in spite of its odour. Had ether a pleasant odour, it would be as an anæsthetic far superior to chloroform.”

Indeed, with the records of *death* from chloroform constantly in view, it scarcely seemed necessary to examine the preceding questions of *convenience*, were it not that these are the very points upon which chloroformists are compelled to base their preference. But, viewing the question of comparative merit from this stand-point alone, we have shown that the advantages of chloroform are more apparent than real—advantages for the physician, and not for the patient; that since the potent character of chloroform requires it to be given slowly, and the difficulty of getting ether sufficiently concentrated necessitates its rapid administration, the time consumed in inducing anæsthesia is practically about the same; the quantity used is of little moment; the pleasant odour of chloroform may count for what it is worth; and finally, as to durability of effect, this advantage should not again be claimed for chloroform, for it is plain that in this respect ether is decidedly superior.

But admitting for a moment that chloroform presents advantages over ether, of rapidity, small quantity, and pleasant odour, we cannot consider that such recommendations offset the certainty of blotting out the life of a certain percentage of human beings. And especially do such recommendations fall short of offsetting the dangers of chloroform, when considered in view of the fact that in ether we have at command a perfectly safe and innocuous agent from which death would be a rare and unexpected event.

Whatever be the explanation of it, it is a fact that throughout chloroform literature ether is seldom represented in a fair light. We quote from

¹ Boston Medical and Surgical Journal, Feb. 13, 1868.

a work¹ on *materia medica*, only lately "officially recommended to the medical students of the University of Dublin:"—

"It was found that ether inhalation was very *uncertain* in its effects, producing in many persons *violent* excitement, spasmodic action of the muscles, *delirium*, and in some instances *death* even following its employment."

This is the final instruction given in regard to ether. Nothing more contrary to facts than are these statements can be conceived. And yet professional opinion, in Great Britain more particularly, sustains statements of this nature, whether through ignorance or national prejudice it would be impossible to say.

At no time in the history of chloroform has more inquietude possessed the minds both of medical men and the laity than at present, and yet there appears no disposition (with a few exceptions) to recognize the full merit of ether. Deaths from chloroform are charged to idiosyncrasy of the patient, to emotion, "fatty heart," anything but the agent itself. New methods of inhalation, and precautions to be exercised, are constantly advanced, and numberless new anæsthetic agents are experimented with. Ether meanwhile has been apparently ignored. Such is the general statement, but in many quarters a reaction has occurred, and its use is being quietly but surely established. A large portion of the human race at some time seek relief of the physician from suffering, and he has no moral right to consult his own convenience and force upon his patients an additional risk. This he does by employing chloroform. The comparison of Mr. Erichsen and Mr. Lister of the respective use of ether and chloroform to the choice between a slow and safe or quicker and more perilous railway train, and the conclusion that the world generally accepts the risk of the latter, does not meet the case, for the traveller assumes his own risk when he undertakes the journey. If, however, he is in pain and suffering, he must get relief, and *another* party now decides the amount of risk for him, viz., the physician. Has he then, for purposes of his own, a right to put his patient upon the most dangerous train? The physician assumes the responsibility of danger, and not the patient, who is incapable of an opinion as to which is the safer course. Physicians, and surgeons particularly, as some sudden stroke of chloroform, for the first time in their own experience, takes from under their hands a life, which they were aiming to save, feel this responsibility.

Now for a time every one awaits a new anæsthetic, but, in spite of the highest anticipations, it has not yet been found.

The feeling of insecurity and danger must soon find some termination, and the inevitable result must be, we conceive, a large diminution of the popular use of chloroform, and a far more universal resort to ether.

W. J. M.

¹ Neligan's Medicines. By Rawdon Macnamara, Prof. *Materia Medica*, &c. &c., Dublin, Ireland.

ART. XXI.—*Surgical Memoirs of the War of the Rebellion*, collected and published by the United States Sanitary Commission. I. Analysis of four hundred and thirty-nine recorded amputations in the contiguity of the lower extremity, by Stephen Smith, M.D. II. Investigations upon the nature, causes, and treatment of hospital gangrene, as it prevailed in the Confederate Armies, 1861–1865, by Joseph Jones, M.D., Professor of Chemistry in the Medical Departments of the University of Louisiana, New Orleans; formerly Surgeon in the Provisional Army of the Confederate States. Edited by Professor Frank Hastings Hamilton. New York: published for the U. S. Sanitary Commission by Hurd & Houghton. Royal 8vo pp. xii., 580. Cambridge: Riverside Press, 1871.

To the inquiring stranger who, looking at a representation of Daniel in the den of lions, asked, "Which was Daniel?" the accommodating show-man replied, "Whichever you prefer; you pays your money and you takes your choice;" so Professor Hamilton, in his capacity of editor, willing to oblige all parties, considerately furnishes three distinct and discordant names to Dr. Smith's paper (each, by the way, incorrect), so that the anxious student, having completed his purchase, may at least exercise the privilege of a free and independent citizen, and adopt whichever name he prefers. Thus, on the title-page, as above quoted, we are informed that Dr. Smith's paper furnishes an analysis of 439 *recorded* amputations in the *contiguity* of the lower extremity; turning over two leaves, we learn from the table of contents that it is 439 *recovered* amputations that are analyzed; while a few pages further on we discover that the recovered amputations are in the *continuity* of the lower extremity. After these harlequin-like transformations we are quite prepared to find that the actual number of amputations tabulated and analyzed by Dr. Smith is not 439, but 447—viz., 158 of the thigh, and 289 (not, as is printed twenty-four times in the running-titles, 287) of the leg. Dr. Jones has fared somewhat better at the editorial hands of Professor Hamilton, though he must, we think, feel a little surprise at finding himself announced as professor in the medical *departments* (how many is not stated) of the University of Louisiana, when, so far as we know, he has never claimed to be professor in more than one medical department of that school.

Seriously speaking, in the name of American medical literature, we protest against this kind of editing; if Professor Hamilton could not spare the time even to correct the proof-sheet of the title-page, he had better have omitted from it his own name.

Dr. Stephen Smith's contribution, which occupies the first portion of the volume, is "based upon the careful study of the stumps of patients when prepared for the application of artificial limbs." The tables, which have been compiled from records made by Dr. Hudson, are very elaborate, and are judiciously used by Dr. Smith to illustrate several points of interest, especially as regards the relative merits of different modes of amputation, and the servicableness, and adaptability to artificial limbs, of stumps in different regions of the lower extremity.

Dr. Smith first analyzes the cases which he has collected according to the *side of the body* on which the operation was performed (omitting two cases of leg amputation, in the histories of which this point is not referred to), and finds that while the proportion of amputations on the thigh and leg, taken

together, was about the same for either side, the *right thigh* and the *left leg* suffered more than their fellows. As there is no apparent reason why an amputation at any particular point of one lower limb should be more fatal than at a corresponding point of the other, we may fairly assume that this discrepancy, though ascertained from the records of recovered cases only, would be equally observed in a tabulation of amputations, no matter what their result. No explanation of this curious circumstance is given by Dr. Smith, but we would suggest that it is probably owing to the fact that soldiers are often wounded while kneeling on the right knee, when the parts of the lower limbs which are chiefly exposed are of course the *left leg* and the *right thigh*.

The next point taken up is the *Frequency of Amputation in the several Regions of the Thigh and Leg*. As regards the thigh, the number of recovered cases is, as might be expected, less in the upper than in the middle, and in the middle than in the lower third, owing, as justly remarked by Dr. Smith, to two circumstances, viz., that amputation is both less often performed and is a more fatal operation in the upper than in the lower portion of the thigh. As regards the leg, Dr. Smith's statistics show a few more recoveries after amputation in the lower than in the upper third, and of each considerably more than in the middle third; no very satisfactory conclusion can, however, be drawn from these figures, for no means are offered of estimating the proportion of successful to unsuccessful cases in each region.

The third section of Dr. Smith's paper is devoted to a consideration of the *Nature of the Missiles* by which the wounds were inflicted in the amputation cases embraced in his tables, but beyond the fact that nearly two-thirds of the wounds were produced by the missiles of infantry (owing, doubtless, to the missiles of artillery commonly making such thorough work as not to require amputation), the figures dealt with are too small to allow the deduction of any valuable inferences. Were we disposed to indulge in verbal criticism, we might fairly question whether axes, trees, railroads, turrets, burns, falls, and rusty nails are properly described as missiles.

Dr. Smith next considers the *Nature and Location of the Injuries inflicted by various Missiles*, and finds that many more of his recovered cases were of amputation for fracture, than of amputation for wound unaccompanied by bone-lesion. No explanation is given, but we would suggest that, besides the obvious reason that flesh wounds less often require amputation than fractures, a wound in which, *e. g.*, the dividing of a large artery renders amputation necessary, is more apt to terminate fatally (on account of hemorrhage before the operation), than one in which, though the bone has suffered, more important parts have escaped.

The *Distribution of Injuries requiring Amputation of the Lower Extremity in recovered Cases* is next considered. From this section we learn that fully one-half of the thigh amputations tabulated by Dr. Smith were for compound fracture of the knee-joint, and that his investigations lead him to coincide in the opinion ordinarily entertained by practical surgeons, both civil and military, that severe gunshot injuries of the knee-joint do not admit of expectant treatment. Dr. Smith seems to us, however, to push statistical investigation a little too far, when (p. 60), after comparing the stumps left by two circular, with those left by two flap amputations of the upper third of the thigh, he declares that "the results of the two methods prove the value of the circular method."

Section VI. treats of the *Methods of Operation, and the Frequency with*

which they were performed in the Thigh and Leg. One or other form of flap operation was performed in nearly two-thirds of the thigh amputations, and in about four-sevenths of those of the leg, the proportion of circular amputations being about one-third in the former and three-sevenths in the latter locality; as, however, the cases tabulated are all instances of recovery, and are not compared with fatal cases, we cannot see that much information is conveyed as to the respective death-rates of the two operations. In the Confederate service, the circular appears (from a table quoted from Dr. Chisolm) to have been performed about twice as often as the flap operation. Comparing 183 recovered, with 134 fatal thigh amputations, in the Confederate service (the figures being, however, derived from different sources), Dr. Smith remarks that "the almost exact correspondence of the proportions of circular and flap operations in the different regions of the thigh, both in the recovered and fatal cases, would seem to prove conclusively that the mere method of operating did not affect the mortality in the slightest degree."

In Section VII.; 431 cases are analyzed with regard to the *Period of Amputation after Injury*. Dividing these cases into *primary* and *secondary* operations, Dr. Smith finds that 299 belong to the former, and only 132 to the latter category; and comparing these statistics with those of recovered amputations from other military sources, he concludes that the proportion of primary cases for both thigh and leg is 77.8 per cent. We agree with the author that this is a singular coincidence, but we cannot see that his figures furnish "the strongest possible evidence of the success of primary amputations over secondary"—for the obvious reason that we are given no means of estimating the relative frequency with which primary and secondary operations have been performed. Indeed, this seems to us to be a weak point of the whole paper: Dr. Smith, though doubtless avoiding the error himself, constantly leads his readers to estimate the advantages of an operation, or the dangers of an injury, not by the proportion of recoveries to deaths, but by the proportion of such operations or injuries found in a given number of recovered cases; the fallacy is the same as if, looking over a weekly report of mortality, we should find two deaths from whooping-cough, and but one from hydrophobia, and should therefore conclude that the former was twice as dangerous as the latter disease.

Dr. Smith, in common with the majority of surgeons, is not satisfied with the ordinary classification of amputations into primary and secondary, and indeed does not seem satisfied with any classification yet suggested, for he proposes a new one, more elaborate even than Prof. Hamilton's, which itself does not err on the side of simplicity. "We name," says Dr. Smith, "five periods, as follows: *before shock* (one hour or less); *during shock* (one to six hours); *during reaction* (sixth to forty-eighth hour); *primary inflammation* (forty-eighth hour to seventh day); *secondary inflammation* (after seventh day). The first two [three?] periods relate to the condition of the patient, and the last two to the condition of the wound."

We confess that we do not see that any practical benefit is to be derived from this elaborate classification; as a matter of fact—in spite of the testimony adduced by Dr. Smith—we are by no means sure that a definite period can be recognized as existing *before* the occurrence of shock, though we are perfectly willing to acknowledge that it may often be better, in military, or even in civil practice, to amputate within a few minutes of

the occurrence of an injury, than to wait as many hours; the advantage, however, is not, we believe, so much in anticipating *shock*, as in avoiding *loss of blood*. That it is occasionally—though by no means usually—right to amputate during the existence of a certain degree of shock, we are well convinced; but we do not think Dr. Smith's statistics prove anything more than that amputation during the first, or between the first and sixth hours, is not necessarily a fatal procedure. When we are asked to believe (as on page 84), because, of a certain number of "recovered cases," 36 per cent. were amputations performed before reaction, and only 30 per cent. amputations performed after reaction and before the development of inflammation, that, therefore, the former class of operations is "six per cent. more successful than" the latter, we must protest that the reasoning is fallacious: as the *whole number of cases operated on* during each period is not given, there is no proof afforded that amputations of the first class were not more fatal than those of the second.

In Section VIII. is considered the *Influence of the Place of Amputation upon the amount of Atrophy of the Stump*. In this and in the succeeding sections, as there is no question of life or death, but only of the value of different stumps, a statistical investigation based on the records of *recovered* cases is of course well adapted to throw light upon the matters under consideration. From careful measurements of 430 leg and thigh stumps, Dr. Smith is led to conclude that—

"1. In the thigh, the farther amputation is performed from the trunk, the greater will be the atrophy of the entire stump.

"2. In the leg, the farther amputation is performed from the trunk, the greater will be the atrophy of the extremity of the stump, and the less the atrophy of the body of the stump."

Section IX. takes up the subject of the *Influence of the Method of Amputation upon the Atrophy of the Stump*. With regard to the thigh, Dr. Smith's investigations show that "the methods which give the least atrophy of the stump, both in its proximal and distal portions, are the skin flaps and circular of the muscles, and the posterior flap. . . . The method by skin flaps and circular of the muscles gives results nearly as favourable as the posterior flap, and much more favourable than any other of the preceding methods. It is greatly preferable to the posterior flap method, both on account of the facility of drainage, and the neat apposition and lightness of the flaps, thus adapting it to transportation." In the case of the leg, the influence of various modes of amputating is said to be less marked, but we infer that here, too, Dr. Smith gives the preference to the modified circular operation.

In Section X. the author considers the *Influence of different Methods of Amputation in the several Regions of the Thigh and Leg on the Rapidity of the Healing Process*. Dr. Smith's tables do not give any very definite information on this subject, but appear to show that, upon the whole, the advantage, as regards rapidity of healing, was with the circular operation.

Section XI. (and last) is on the *Adaptation of Compensative Appliances*. "Second only in importance to the life of the individual is the value of the stump for compensative appliances. The great aim of the surgeon now is, when the first question is answered and the safety of the patient is duly considered, at what point and by what method shall amputation be performed to secure a stump most favourable to the application of the best form of artificial limbs." Fully acknowledging the justness of the

above remark, we regret the more that Dr. Smith has contented himself with propounding this question without attempting to answer it.

As may probably be inferred from the above running commentary upon Dr. Smith's paper, it strikes us as being, upon the whole, not entirely satisfactory, nor of very great practical value; but that such is the case, is, we believe, principally owing to the nature of the material with which the author had to deal. After all, there is not a great deal to be learnt from successful cases—at least a great deal less than is to be learnt from those which are unsuccessful; and our chief regret is, that it did not become Dr. Smith's duty to analyze for our instruction—as no one is better able to do—four hundred and odd post-mortem records of fatal results after amputation, in place of giving us this discourse upon *recovered* cases, which, though doubtless more satisfactory to both patients and operators, are less valuable to students of surgical science.

Dovetailed in between the paper which we have just been considering and Dr. Jones's on Hospital Gangrene, is another, unmentioned on the title-page of the volume, which is also by Dr. Stephen Smith, and is on *Amputations at the Ankle-Joint in Military Surgery*.

Comparing the mortality of ankle-joint, with that of leg amputations, Dr. Smith finds that in the United States army, during the War of the Rebellion, the death-rates of the operations in question were respectively 13.43 and 26.02 per cent., while in the Confederate service the death-rates were 20 and 27 per cent., and in the British army, during the Crimean war, 18 and 36 per cent. "From these statistics," Dr. Smith adds, "it appears that amputation of the ankle-joint is 50 per cent. less fatal than the alternative amputation through the leg." We cannot commend the accuracy of this calculation, which, indeed, we are a little surprised to find in the work of a writer who is as much accustomed to statistical investigations as is Dr. Smith. 18 per cent. is, indeed, half of, but by no means 50 per cent. less than 36 per cent.; and the difference in death-rates is obviously *not* 50 per cent., but 12.6, 18, or 7 per cent., according to the figures derived from the different sources mentioned.

Dr. Smith sums up his review of the comparative merits of ankle-joint and leg amputations as follows:—

"1. Ankle-joint amputations are 50 per cent. less fatal than leg amputations. [This we have already shown to be an error.]

"2. Ankle-joint amputations are 3 per cent. more liable to be followed by reamputation than leg amputations.

"3. The stumps left after ankle-joint amputations are far more serviceable than those resulting from leg amputation for unassisted locomotion.

"4. An artificial limb can be far more usefully applied to an ankle-joint than to a leg stump."

From a consideration of the respective advantages of Pirogoff's and Syme's operations (of the former of which 8, and of the latter of which 23 cases are tabulated), Dr. Smith concludes that, for unaided locomotion, the stump made by Pirogoff's is superior to that made by Syme's method, on account of the greater length of the former—the endurance of the two forms of stump being practically the same. We may add that, from this point of view, the stump made by Hancock's modification of the subastragaloid amputation, would appear, on theoretical grounds, to be better than either, as being even longer than that made by Pirogoff's operation, while preserving at the same time the power of motion at the ankle-joint. For use with an artificial limb, on the other hand, Dr. Smith considers the

stump made by Syme's method decidedly superior to that made by Pirogoff's.

"The advantages of greater length yielded to Pirogoff's stump when employed in locomotion without aid, prove to be disadvantages when a proper artificial limb is adjusted. In constructing a useful artificial foot, it is very important that there be space for an ankle-joint which shall have full play. In Pirogoff's stump the base of support is so near the floor, that the joint must necessarily be on a much lower plane than that of the sound limb, and have but limited movements. . . . In Syme's stump, on the contrary, the base of support is on the same plane as the original ankle-joint, and this space enables the mechanical surgeon to construct a joint which acts with as long a leverage and as free motion as the natural joint. In this respect Syme's stump has a real and permanent advantage over that of Pirogoff."

Here, again, we may add, Hancock's operation would appear to promise a better stump than either of the others, and we should be disposed to recommend a trial of this method, in any case in which the lesion which rendered amputation necessary did not involve the entire astragalus.

We are glad to find, at the conclusion of Dr. Smith's paper, a letter from Pirogoff himself to Mr. Hancock, in which the distinguished Russian surgeon indignantly denies the truth of the oft-repeated assertion that he has himself abandoned the operation which bears his name: it would indeed be strange if a proceeding which has found so much favour with practical surgeons in all parts of the world should be ultimately rejected by its inventor, and we hope that this authoritative denial will prevent the future repetition of such an absurd story.

We come now to Prof. Jones's *Investigations upon Hospital Gangrene*, which occupy much the largest portion of the volume, dragging indeed their slow length through no less than 425 pages. No one can, with justice, accuse Prof. Jones of haste, or of too great brevity, in his consideration of the matters which occupy his pen; but, on the other hand, a charge of prolixity might, we fear, be maintained with some show of reason. Thus we find a Circular, which was addressed by Dr. Jones to the medical officers of the Confederate service, and which, if they found time to read, not to speak of answering, they must have had much more leisure for literary pursuits than was afforded to the surgeons of our own army. This Circular occupies seventeen pages of print, and contains numerous quotations from such excellent writers as Bacon, Sydenham, Huxham, Laycock, and Holland, which, though doubtless interesting and instructive, could, we think, hardly have been read with due appreciation and gratitude by hard-worked regimental surgeons, more especially when accompanied by thirty or forty comprehensive questions, to be carefully studied and responded to, together with a "Form of Table for the Rapid (!) Record of Cases," containing no less than forty-one separate columns, and calling for information upon over sixty different points, and for accurate analyses of both blood and urine.

Prof. Jones evidently differs from Hippocrates as to the comparative brevity of art and human existence, or he would not venture to devote, as he does, thirteen octavo pages to proving "the necessity for a more accurate classification of the varieties of gangrene than that now employed in the Confederate 'Sick and Wounded Reports'"—since those reports, with the war which called them forth, may fairly be looked upon as things of the past; nor, again, would he occupy fifteen pages (made up chiefly of excerpts from various writers, ranging in antiquity from Homer and He-

rodotos to Rénouard), in demonstrating that the *absence* of special descriptions of hospital gangrene, among the ancients, is *no* proof that it is *not* a disease of great antiquity. Prof. Jones's elaborate essay is divided into an introduction and six chapters, at which we now purpose to take, as it were, a bird's-eye glance, the space already occupied by this review precluding a more detailed examination—which, indeed, is the less necessary, since Prof. Jones's doctrines have already been brought before the profession in the pages of the *New Orleans Journal of Medicine*.

In his introduction, Prof. Jones gives a history of the various investigations which he has instituted upon the subject of hospital gangrene, giving an account of the first case which came under his own observation, and of the ravages of the disease as it prevailed among the Confederate soldiers, in hospitals in South Carolina, Virginia, and Georgia, and, above all, among the Federal troops in the horrible military prison at Andersonville, in the last-named State.

The policy which seems to have been pursued in the Confederate service, of collecting cases of hospital gangrene into special hospitals, is justly characterized by Dr. Jones as "doubtful, if not dangerous and disastrous;" of 385 cases of hospital gangrene treated during three months at the Empire Hospital, near Macon, Georgia, sixty-five, or nearly one-sixth, proved fatal.

Prof. Jones's investigations are founded upon the records of "more than one thousand cases of hospital gangrene," and his remarks are arranged under several heads, viz.: (1) a description of the phenomena of the disease, embracing an account of the microscopical appearance of the gangrenous matter at different periods, the changes in the blood and urine, and the variations in pulse, respiration, and temperature; (2) the causes of death, with a description of the pathological changes; (3) the causes of the disease; (4) a theory of the disease; (5) the relations of hospital gangrene to other diseases; (6) the treatment of the disease; and (7) the views and labours of Confederate surgeons upon the subject of hospital gangrene.

After two pages of remarks upon the method which should be pursued in the study of mortification in general, Prof. Jones comes to the rather unsatisfactory conclusion that "it is evident that the thorough investigation of the relations of mortification here pointed out would not only necessitate immense labour, but also the discovery and invention of methods of experiment, and of tests and apparatus, unknown to pathological science."

In his classification of the various kinds of mortification, Prof. Jones seems to us to err on the side of unnecessary minuteness, making four principal, and about eighteen subdivisions; in his views of inflammation he still appears to cling to what used to be known as Paget's doctrines—doctrines now abandoned by Paget himself—and impartially ignores both the teachings of Virchow and the more recent observations of Cohnheim and other modern pathologists; perhaps, however, this is to be accounted for by the fact mentioned in a sentence on page 193, in which he apologizes for not making a still greater display of erudition than he does, by explaining that, "cut off entirely from surrounding nations, and with the enemy ravaging" his "native State from the mountains to the seaboard," he is restricted, in the matter of references, to his private library and to the library of the medical college of Georgia.

In Chapter I., Prof. Jones gives an "*Outline of the Symptoms and Changes characteristic of Hospital Gangrene, as it has manifested*"

itself in the Confederate Armies." With regard to the different views entertained as to the nature of hospital gangrene, we are told that the affection may be looked upon (1) as a local disease, (2) as a constitutional disease, (3) as both local and constitutional in its origin, and (4) as a disease arising from the action of a specific poison which acts in a manner similar to that of smallpox, measles, and scarlet fever. Of these different views, Prof. Jones adopts the third, therein coinciding, if we mistake not, with the majority of modern surgical writers. While in many cases the constitutional preceded the local symptoms, in other instances "the attention of the wounded men was first called to the injured parts by severe and darting pains in the wounds."

"In some cases, in the earliest stages the wounds presented a dark red, glazed surface; the granulations became altered in appearance and rapidly disappeared; the discharge of healthy pus disappeared, and was followed by a reddish and greenish sanious fetid discharge. The parts around the wound became painful and swollen, and frequently a well-defined red and purplish indurated border in the sound skin surrounded the wound. The wound itself rapidly assumed a swollen, ragged appearance (the gangrenous matter often rising several lines above the surrounding tissues), with swollen, ragged, everted edges. With this infiltration of the diseased structures, and the consequent elevation of the surface and eversion of the edges of the wound, the glazed, dark red appearance of the wound disappears, and the gangrenous mass presents a greenish and grayish colour."

In some instances gangrene appeared in parts at a greater or less distance from the original wound, without any apparent cause.

"In such cases a purple or blue spot is first perceived, or the colour might more properly be termed, in some cases, an ash-gray or leaden hue. The cuticle is sometimes raised, and contains serum below. The rapidity of the progress of the gangrene in such spots will depend chiefly upon the extent to which the system has been poisoned by the absorption of the deleterious matters." The skin in these spots has been observed to "melt away in twenty-four hours into a grayish and greenish slough, whilst a deep blue and purple, almost black, areola, surrounding the dead mass, spread rapidly in ever-increasing circles; whilst the skin and tissues within, over which it has just passed, changed rapidly to the ash-gray and green and bluish hue characteristic of this form of gangrene."

Death may result from constitutional depression before time has been afforded for the full development of the local changes, or from hemorrhage from the giving way of a large artery, or even after the arrest of the gangrenous process, from general exhaustion and hectic.

Chapter II. gives a record of *Microscopical and Chemical Investigations upon Hospital Gangrene*. Prof. Jones has made numerous microscopical examinations of the gangrenous matter derived from wounds affected with hospital gangrene, finding "innumerable granules, . . detached masses of fibrous and muscular tissue, broken bloodvessels, disorganizing [sic] blood-corpuscles, and in some cases . . . crystals of the triple phosphates."

Prof. Jones has also discovered living organisms in the matter of hospital gangrene, a circumstance which is particularly interesting, because the investigations of other microscopists have led them to deny the presence of such objects:—

¹ See an excellent paper by Dr. Wm. Thomson, formerly Assistant Surgeon U.S.A., in No. of this Journal for April, 1864, p. 393.

"Animalcules of simple organization, and endowed with active rotary motion, abound in hospital gangrene. The number of these vary very much, both in the gangrenous matter and in the urine, with the temperature of the surrounding atmosphere. In cold weather they are less numerous than in hot weather. When the decomposition of the living tissues has taken place under the sound skin, I have also found that the animalcules are not present, or, if present, exist in small numbers."

These animalcules do not, however, appear to have any connection with the origin or propagation of hospital gangrene:—

"The gangrenous matter appears to afford a nidus in which these simple forms of animal and even of vegetable life are rapidly generated and multiplied. . . . The warmth of the human body also, without doubt, affords a most favourable condition for the rapid development of the simpler forms of animal life."

Prof. Jones has, however, been unable to discover any animalculæ peculiar to hospital gangrene. The simpler forms of vegetation are also present, but less abundantly than those of animal life, and, like the latter, are in no respect peculiar to hospital gangrene.

"I have been unable," adds Prof. Jones, "to establish any relation between the rapidity of the spread of the disease and the number and character of the living organisms, and have even found them absent in the most extensive gangrene which had been excluded by the sound skin from the atmosphere."

Prof. Jones has satisfied himself that the pus-cell is not found in the true gangrenous matter of hospital gangrene, and looks upon the reappearance of pus, in a gangrenous wound, as a sign of favourable import.

Coming to the *Chemical Examination of the Gangrenous Matter*, Prof. Jones contents himself in this place with "a brief reference to the great complexity of the investigation," reserving the "full analysis" for what is to be "the final report," which does not, however, appear to be included in the present volume. The brief reference is to the effect that

"In a gangrenous mass of matter upon . . . any muscular portion of the human body, there are more than thirty different organic and mineral bodies, in various states of combination, which should be examined, besides the various products resulting from their decomposition. . . .

"In hospital gangrene we have all these substances, many of which are highly complex in their chemical constitution, mingled together in a disorganizing [sic] decomposing mass. The problem involves not merely the determination of the peculiar poison inducing gangrene, but also the various products resulting from the chemical changes which it induces in these highly complex organic compounds."

Examination of the blood in five cases of hospital gangrene showed that the proportion of fibrin was somewhat greater than in healthy blood, "less than in the phlegmasiæ generally, but more abundant than in the pyrexiaë."

From the facts detailed in this and the previous chapter, Prof. Jones draws the following conclusions:—

"1. Hospital gangrene is caused by the action of an irritant, corrosive, organic poison, generated during the decomposition of animal matter under certain conditions, and capable of exciting change and decomposition in living structures with which it is brought into contact, after the manner of a ferment.

"2. This poison may arise *de novo*, whenever certain conditions favourable to its development exist. . . .

"3. Hospital gangrene may be both local and constitutional in its origin. . . .

"4. The action of the poison of hospital gangrene is attended with both local and constitutional symptoms of inflammation. . . .

"5. The changes excited both locally and constitutionally by the gangrenous poison, are such that the products and phenomena of the disease vary to a certain extent from those of ordinary inflammations. . . .

"6. The gangrenous poison, as well as the compounds resulting from the disintegrations which it induces in the organic constituents of the structures, when absorbed, act as poisons upon the muscular and nervous systems, and tend to disorganize the blood and derange the actions of the alimentary canal."

In Chapter III., Prof. Jones considers the variations of temperature and circulation in hospital gangrene, and the changes observed in the urine in the same disease. The temperature and pulse-rate are lowest in the morning, rising during the day, and reaching their maximum at or near midnight. The daily variation in temperature may be as much as five degrees (from 99° Fahr. to 104° Fahr.), while the corresponding variation in pulse-rate may be twenty beats or more. The difference in temperature, between the central parts and the extremities, is not unfrequently from ten to fifteen degrees. The following is a summary of the changes in the urine observed in hospital gangrene: the colouring matters are increased, the height of the colour corresponding with the severity of the attack; when pyæmia supervenes, the urine assumes a pink hue, due to the destruction of the red blood-corpuscles, which the author, utterly ignoring the researches of modern pathologists upon pyæmia, does not hesitate to declare is "induced by the presence of pus in the blood." The urea, phosphoric, and sulphuric acids of the urine are increased, but to a less extent than in the ordinary fevers; the chloride of sodium is diminished, and in the worst cases almost disappears, while the uric acid is, in most cases, greatly increased.

This chapter concludes with a comparison of the phenomena of hospital gangrene with those of certain other diseases, particularly pyæmia, common inflammatory or surgical fever, smallpox, and typhoid fever.

Chapter IV. is devoted to the progress of hospital gangrene towards recovery, and to the causes of death and results of post-mortem examinations in this disease. There does not appear to be any *crisis* in hospital gangrene, the symptoms, both constitutional and local, undergoing (in favourable cases) a gradual and progressive improvement. The following are, according to Prof. Jones, the causes of death in cases of hospital gangrene: (1) progressive failure of the vital powers under the depressing influence of the disease, (2) hemorrhage from eroded bloodvessels, (3) entrance of air into veins, (4) opening of large joints, (5) formation of bed-sores, (6) diarrhœa, (7) subcutaneous disorganization of the tissues around the wound, with absorption of gangrenous matter, prostration, and diarrhœa, (8) mortification of internal organs, (9) invasion of vital organs by direct spread of the disease, (10) pyæmia, (11) phlebitis, and (12) various sequelæ, such as profuse suppuration, necrosis, and permanent impairment of the digestive functions.

The author adds a commentary upon the pathology and natural history of pyæmia, in which he advances views, concerning which we will merely remark that they would have appeared less antiquated ten or fifteen years ago than they do at the present time.

Chapter V. treats of the causes of hospital gangrene, which are classified as (1) a debilitated and cachectic state of the constitution, (2) the air of crowded hospitals, tents, and ships loaded with animal exhalations, and (3) the contact of gangrenous matter with diseased and wounded

surfaces, as in using unclean sponges or instruments. This chapter terminates with an account of the sufferings from hospital gangrene of the unfortunate soldiers in the military prison at Andersonville, Georgia, which, to say the least, is not pleasant reading.

Chapter VI., and last, considers the treatment of hospital gangrene, describing in succession the measures which, in the author's opinion, should be adopted to prevent the development and spread of the disease, the constitutional remedies which should be administered, and the local applications which should be employed. The importance of free ventilation, good diet, and cleanliness is properly insisted upon, as the most important prophylactic measures: when from the nature of a patient's injury his periodical ablutions are necessarily omitted, Prof. Jones recommends, as a substitute, sponging with a mixture containing the liq. sodæ chlorinatæ of the U. S. Pharmacopœia, with tincture of camphor, whiskey, and common salt. As a dressing for gunshot wounds he recommends a cerate, containing tincture of iodine, carbolic acid, and laudanum.

The following are given as the indications to be met in the treatment of hospital gangrene, the first three referring to the general, and the last three to the topical measures to be employed:—

“First. To remove the patient from all causes which tend to depress the system, and especially from those causes which are known to have been directly and specially active.

“Second. To eliminate the deleterious agent.

“Third. To restore the system to such a condition, that healthy nutrition, reparation, and inflammation may take place.

“Fourth. To induce such changes in the injured parts themselves, as will lead to a complete separation between the diseased and dead structures.

“Fifth. To destroy all poisonous matter in the diseased parts.

“Sixth. After the removal of the dead parts, and after the destruction of all contagious elements capable of disseminating the disease to the surrounding tissues, to stimulate the capillaries and absorbents around the local injury to such healthy, active, inflammatory action, as will result in the development of healthy granulations.”

The remedies most relied upon in the constitutional treatment, seem to be mercurial purges, tonics (especially iron, quinia, and the mineral acids), oil of turpentine, opium, and subnitrate of bismuth, in cases attended with diarrhœa. Concentrated nitric acid is recommended as a local application, followed by poultices containing such articles as oil of turpentine, tincture of camphor, or creasote; antiseptic and detergent lotions are also advised. We may add, that *bromine*, which acquired such a high reputation among the surgeons of our army, is not even alluded to.

Prof. Jones's essay is accompanied with five chromo-lithographic illustrations, being less than one-tenth of the number referred to in the text, the rest being, possibly from financial considerations, “omitted.” The volume terminates with a tolerably full index.

In taking leave of Prof. Jones's elaborate essay, we cannot but express our regret that the solid and really valuable information which it conveys is overlaid and almost smothered by such a mass of matter which is utterly irrelevant to the questions under discussion. We must also express our regret that at least an effort has not been made to bring certain of the pathological doctrines which are advanced into closer harmony with the established facts and accepted views of modern science. Certainly sufficient time has elapsed since the termination of the war, for a revision and correction of the pages which are now offered to the profession, and no indol-

gence can be reasonably asked for, on the ground of unavoidable haste, or pressure of other duties.

The volume is showily but not very correctly printed; among other odd mistakes, we find, on page 226, a reference to the "erysipelatous liver" [probably meant for *livor*] and vesication of the surrounding skin."

J. A., JR.

ART. XXII.—*Second Annual Report of the State Board of Health of Massachusetts.* January, 1871. pp. 433. Boston.

SOME three years ago, the State of Massachusetts concluded that the health of its people was a matter of public concern, and therefore a proper subject for legislation. The idea had begun to prevail that much useful sanitary information could be obtained by a board, acting in a public capacity, and receiving and utilizing the facts and opinions of individual observers. With this end in view, there was established a Board of Health, consisting of seven members, whose business it is to inquire into all matters appertaining to the sanitary condition of the people, and to report thereon to the legislature.

The volume before us bears abundant witness to the wisdom that prompted this movement, and the value of the information elicited. The nature and importance of the work may be partly seen from the mere titles of the papers published. These are: Poisoning by leaden water-pipes; Trichina disease in Massachusetts; Health of towns; Charbon; Causes of typhoid fever; Homes for the poor; Convalescent homes; Sewage; Effects of intoxicating drink, at home and abroad; Analysis of mortality in the city of Boston in 1870; Ventilation of school-houses; Examination of the water of Mystic Pond and its tributaries; Air and its impurities; Health of minors employed in factories; Use of milk from cows affected with "foot and mouth disease." But it is not merely the subjects treated that give to this report its great interest and importance. Every one of the papers is marked by faithful and intelligent investigation, and furnishes suggestions of inestimable value.

There is perhaps no clearer manifestation of the genuine and healthy growth of medical science in our time, than the close and accurate scrutiny now making into the causes and conditions of disease. The age of panaceas and specifics is nearly past. The honest and educated physician is a more modest man than his predecessor of a half-century ago. With less faith in drugs, he has more in Nature. Less confident of his power to thwart the processes of disease, he is more apt to observe, comprehend, and guide them. If he rarely pretends to the power of aborting, jugulating, or arresting acute illness, he certainly is in far less danger of crushing his patient by a blow aimed at the disease. More and more does the intelligent physician regard the causes of disease as the true objective point of his pursuit. More and more fully every year does he realize, practically as well as theoretically, that every malady is the result of some cause or group of causes. And the grand principle that most cases of illness occur as the consequence not of single, but of combined causes, is beginning to be rightly appreciated. To seek these out, to distinguish them into predisposing and exciting, mediate and immediate, essential and accidental,

and, above all, into avoidable and unavoidable, this is now the task of the physician. No longer looking on disease as an inscrutable, mysterious affliction, direct from the chastening hand of an angry Deity, but as the reasonable consequence of certain antecedents, known or unknown, he seeks fully to apprehend the number and variety of these causes, in the hope that some may be found preventable. The more thoroughly all conditions of disease are investigated, the more likelihood is there of discovering some one or more morbid influences, which may be capable of removal. Even if such removable causes of disease be less numerous or less efficient than those which are beyond our control, it is still our province to do the little we can to avert suffering. And the more disease is studied, the greater proportion will the avoidable causes bear to the others. Every year new light is thrown on the origin of some form or class of disease; and very often that light shows us where we may lay a helping and healing hand. If to-day a malady be yet an enigma, or its causes, though known, apparently beyond our power to control, to-morrow may remove the veil, or reveal the means of overcoming the morbid tendency.

The volume before us is a noble evidence of the desire among medical men to know and abolish the sources of sickness and death. It is pleasant to observe the spirit and fidelity with which the Massachusetts "Board" has done its work. Here are no mere forms, preliminary to the drawing of salaries. The work is so good and so honest, that, in these days of political corruption, it is difficult to believe that it has been done by the nominees of a State legislature. The expenses reported for the year are only \$2300; less than one-half the appropriation. Very properly, however, the Board asks that the appropriation be continued undiminished, to provide for further investigations, and the possibility of unforeseen needs.

The chairman of the Board is Henry I. Bowditch, M.D., one of the most eminent of the elder Boston physicians. Our readers will remember him as directing the attention of the profession, some years ago, to the influence of local climatic causes in the originating and developing of phthisis. The method then adopted in his own investigations—a systematic correspondence with medical men throughout the State—has been most successfully employed in the report before us, in accumulating facts and opinions on matters of sanitary importance. At the request of the Board, the authorities of the different towns have each appointed some prominent resident physician to act as its informant and correspondent. Of course all facts bearing upon the health of the several towns are welcomed; but to provide against possible forgetfulness or negligence, and to obtain facts on certain points which the Board desire to investigate, circulars were sent to all the correspondents, containing a series of questions. This plan has succeeded in eliciting the facts observed and the opinions entertained by some two hundred physicians in as many different towns. These, if not composing the entire State, yet fairly represent all the diversities of climate and local influences to be found within its borders. Towns by the sea, and towns in the mountains; towns by rivers and by ponds; towns built upon the rock, and upon the sands; towns agricultural, fishing, manufacturing, and commercial; from Cape Cod to the mountains west of the Connecticut—all are represented. The reports sent by these correspondents in answer to the letters of inquiry from the Board are generally intelligent and pertinent. When the various replies to any one question are compared together, they often develop facts of great interest and im-

portance. The results of the correspondence, and often the exact words written, are given under different heads, in the dozen essays which compose the volume. The Secretary, Dr. George Derby, whose whole soul seems to be in his work, has, by skilful analysis and arrangement, admirably used the matter provided by his correspondents. Besides this labor, he has visited towns in all parts of the State, consulted with the local Boards of Health, delivered lectures on subjects connected with sanitary science, and thus kept authorities, physicians, and the public well informed as to the existence and objects of the Board.

To illustrate the conscientious manner in which this organization has striven to perform its whole duty, we may note their apology for the non-appearance of an exhaustive report on the effect of sewing-machines upon the health of the operators. Such a work was expected from a prominent physician in a manufacturing city, appointed to make the investigation, but who failed to perform his task.

In the preparation of the various essays before us, the Secretary has, in some cases, done all the work himself, and—whether of mere arrangement, or of generalization and reasoning—has done it well; while in other cases, he has availed himself of the talents of gentlemen eminent in some special line of investigation. The great value of the information given in these papers leads us to wish that all the States might imitate the old Bay State in the appointment of a truly scientific Board of Health.

One of the longest and most elaborate essays is entitled "*An Inquiry into the Causes of Typhoid Fever in Massachusetts.*" This disease is a very common one in New England. Apart from the many lives lost by it, the loss of time by those who recover is of much moment in an economical point of view. Hence the fact here demonstrated, that the prevalence of the disease is influenced by conditions at least partly removable, is of very great importance. The facts collected from different correspondents seem to indicate that there are several antecedents bearing a close connection with the production of this fever, and which are often capable of removal. One apparent cause of the disease is the use of drinking-water contaminated with sewage. That such water has seemed, in many cases, to be the actual exciting cause of the malady, seems to be proved by many remarkable facts. Yet that by itself it always causes the disease, is certainly not true. And, moreover, in other cases, another class of antecedents seem to stand just as clearly in the position of causation. Why in certain cases the use of foul water seems innocuous, while in others every consumer is stricken with the fever, is a curious problem. But certainly the facts collected in this essay, while clearly showing the possible activity of filthy water as a cause of disease, do no less clearly show that it is by no means so surely noxious as is believed by some recent English writers. It would be hard to explain the experience of Boston, upon the view of these observers. For, until twenty years ago, though very closely built, its water-supply was wholly derived from wells in cellars, yards, and streets—and of course exposed to the contaminations so much dreaded. Now, at the time mentioned, an abundant supply was obtained by aqueduct from a pure and distant lake—superseding almost totally the old wells; and causing, too, a vast improvement in habits of cleanness. Yet there was no such remarkable diminution in the amount of typhoid as should have obtained, were it caused by bad water.

Impure air, and not water, is as strenuously maintained, by some, to be the cause of typhoid. And certainly, that it has in many of the endemics

described by correspondents, occupied the place of apparent cause, or essential condition, is indubitable. The precise nature of the impurity liable to cause the malady in question is not known. It seems as though air, loaded with odorous products of decomposition, is less often noxious than that tainted with less perceptible impurities. It is suggested, that possibly the deleterious element may be an earlier product of decay than the offensive gases. Practically, the evidence is overwhelming that the emanations of sewers, and of cellars containing decaying vegetables, are often causes, if not the only or essential cause, of the typhoid or enteric fever.

However we may be puzzled by the singular contradiction apparent in the facts, we fortunately can have no hesitation in drawing the valuable practical inference that this very grave and common disease is largely due to preventable contamination of the air we breathe, and the water we drink. One form of atmospheric impurity sometimes connected with the prevalence of disease, is less preventable, though not wholly beyond our control. We refer to the emanations from newly upturned mould, and from drying ponds or marshes. The reality of the connection between telluric influences and typhoid is shown partly by the greater prevalence of the disease in autumn and early winter, and more positively and strikingly by the relation shown to exist between the character of the subsoil and the prevalence of typhoid in different towns. A clayey or otherwise hard and impenetrable subsoil is found to favour the prevalence of the disease; while an open, porous subsoil is generally associated with a comparative immunity. The writer adverts to the smaller proportion of cases found in the cities as compared to the country towns, as supporting his view of the potency of telluric causes. The close pavements of the former, he thinks, prevent the ascent of the baneful miasm. The curious fact is recognized that the same kind of earthy influences producing typhoid, but never intermittent, in Massachusetts, are the generally accepted causes of the latter disease in the States where it prevails.

The essayist quotes the opinion of Dr. Benjamin Rush, written sixty years ago, supporting the views now presented of the causation and preventability of fever, and prophesying its ultimate control by municipal ordinances.

The report on *Lead-Poisoning from the Use of Leaden Water-pipes* contains nothing of especial novelty or importance. The practical hint, never to use water which has been standing in contact with the metal, deserves to be closely heeded.

The paper on the "*Trichina Disease*" points out thorough cookery as the one sure preventative. The writer does not believe the malady to be a new one, but rather to have been formerly confounded with acute febrile diseases.

The article on the "*Health of Towns*," made up from the answers to queries relative to diseases most prevailing in the different districts, is one of great interest. The effects of occupation, habits of life, soil, sunlight, shade, dampness, and all the other circumstances which affect life and health, are forcibly illustrated or thoughtfully suggested. The researches of Dr. Bowditch, begun years ago, into the influence of local climate upon the prevalence of phthisis, have evidently had their effect in leading the correspondents to look closely and critically at all the traits, natural or artificial, which characterize the climate and influences of their several localities.

The report on "*Charbon*," or malignant vesicle, was prepared in consequence of a few cases arising from time to time among workers in horse-hair, in a single town. It is a carefully written account of the disease, with a searching inquiry into its origin, and full directions for destroying the infectious element in suspected hair.

The essay entitled "*Homes for the Poor: Convalescent Homes: The Sewage Question*," is from the pen of Dr. Bowditch. It is made up principally of his own observations of the dwellings of the poor at home and abroad; the influence which these exercise on the health and character of their inhabitants; and the attempts now making in London to benefit the lower classes through improved lodgings. During a recent sojourn of several months in London, he penetrated the worst slums of that city, and became thoroughly conversant with the physical and moral causes of the degradation there existing. He also made himself acquainted with the views, plans, and efforts of the philanthropists who are now seeking to elevate the social condition of the people. His account of what he saw and heard is of thrilling interest, and full of useful suggestions. One great lesson drawn from the experiment of providing good and wholesome dwellings for the London poor is, that better homes make better men. Not only are the beginnings of vice and crime prevented by the influence of decent homes, but even persons already vicious are to a certain extent amenable to the improving agencies of comfort and cleanliness. It does not require extraordinary far-sightedness to predict that before many years society will conclude that it cannot afford to allow the poor to live in filth and squalor. As a merely economic and self-protective measure, it will compel landlords to conform their tenements strictly to the rules of sanitary science, and will rigidly limit the number of tenants to be permitted in a certain space. It is folly for even the most selfish member of the wealthy classes to be regardless of the misery that lies all around him in the great cities. The pestilence which begins among the degraded does not always stop there. The rag-picker may bring contagion to the very door of the rich man. The breath of the wretched beggar craving alms of his lady at her carriage-step, may waft to her the seeds of death. The little wanderer of the street, in brushing past his child, may render vain the anxious care of years. The highly recommended nurse-maid may even carry the infant into scenes and atmospheres that would make him shudder. But even if he and his escape these personal dangers, the heavy taxation needed to support and punish as criminals those who should have been honest workers, and the less direct but indubitably evil influence of misery, vice, and crime upon the general business prosperity of his city, should lead the worldly-wise man to act like the philanthropist.

Convalescent homes in the country, to which poor patients making slow recovery in city hospitals may be transferred to complete their cure, are warmly advocated by Dr. Bowditch. Reminding us of the fact that patients are discharged from all our great hospitals before full restoration has occurred, he shows how often a relapse, or permanent debility, results from the return of such patients to their homes and labours before their strength is regained. Humanity, and, if her mandates be disregarded, true economy, bid us provide places wherein the weakened frame may enjoy the beneficent influence of time, fresh air, change of scene, good food, and generally wholesome surroundings. Several institutions of this character are now in operation in England. The relief they afford is almost incalculable. Any one who has been connected with a large metropolitan

hospital, even in this country, where the pressure of new and urgent cases necessitates the hurrying out of patients before they are really strong enough safely to resume work, and where there are always some cases to whose complete recovery fresh country air is an indispensable but unattainable condition, will rejoice to learn that one of the great London hospitals is now provided with a convalescent branch in the country. "Will Massachusetts," Dr. Bowditch asks, "take the lead in this most beneficent of sanitary measures?" Will not some wealthy Philadelphian, actuated by a noble pride and worthy rivalry, hasten to place our own State and city in this proud position?

The question of the disposition to be made of sewage was found by Dr. Bowditch to be exciting great and increasing attention among political economists and sanitary reformers. In its twofold aspect of health and economy, it has even become the great question of the day in England. Let us in America not wait until our exhausted land fails to feed our multiplied millions, before taking effective measures to save and return to the soil the material taken from it and essential to its fertility. Some of the English writers and experimenters believe that the "earth-closet" principle is the one upon which will be solved the double problem. On the scale of single farms, and hospitals, and in several villages of some fifty houses, it has proved a perfect success both in disinfesting and utilizing the sewage. The method seems well worth trying by our farmers and by many others in particular circumstances. Its applicability on a much grander scale is also worthy of full investigation.

One very curious, if not especially valuable, collection of answers, resulted from the question, sent to all the correspondents, "What, in your judgment, has been the effect of the use of intoxicating liquors as a beverage, upon the health and lives of the people of your town?" As may be supposed, the replies are very various; still, out of the one hundred and sixty-four respondents, nearly all admit that a great deal of evil results from such use. Of more value, perhaps, are the responses published to somewhat similar though fuller queries addressed to U. S. consuls all over the world. It was asked what kind of intoxicating drinks were used, and what kind and amount of crime could be attributed to them. Some very curious and interesting facts are published, though not all capable of yielding any general inferences. It seems, however, that little or no crime results in southern countries from the large and universal consumption of their wines. Intoxication here is very rare, and confined to those who use liquors stronger than the native wines. As we go north, we find a greater amount of intoxication and of resulting crime. The liquors consumed are generally much stronger. Quarrels and violence are here the ordinary results of drink, while in southern countries no such effect results even in the rare cases of intemperance. The universality of the craving for stimulants is shown by the letters given from Europe, Asia, Africa, both Americas, and the islands of all the great oceans. One curious fact stated is that in certain parts of Ireland common ether has almost entirely supplanted whiskey as a potation.

The tables presented under the heading of "*Mortality of Boston in 1870*" are of much value, as showing the effects of local conditions upon the death-rate of different parts of the city. They are rendered more significant by the fact that the statistics are collected not according to the wards of the city—which in many cases include regions widely different in all sanitary respects—but according to "health-districts." In dividing

the city into these districts, attention was directed solely to securing in each a certain homogeneity of character. Presented in this form, the figures are startling. Two sets of influences unfavourable to health prevail in varying proportions in different districts. One is the filth, poverty, and unwholesome living of the degraded poor; the other, the noxious miasm, bad drainage, and dampness due to recently and imperfectly filled "made land." The enormous discrepancy between the percentage of mortality in the different districts, and the still greater difference in the proportion of the deaths from cholera infantum, scarlatina, and some other diseases largely dependent on local causes, is very strikingly shown. No more startling exhibition of the dominion exercised by such causes over the prevalence of these diseases could be imagined. The Board brings against the municipal government the grave accusation that it has allowed building to go on and people to reside on land unfit for human habitation; so imperfectly drained and so slightly raised above the sea-level, that untold suffering and death must result, and whole districts ultimately be raised and rebuilt at an enormous cost. Certainly the facts presented wear an ugly aspect. How strange it seems that the authorities of our great cities fail to realize the awful responsibility which rests upon them! How little would they relish municipal banquets, or even municipal pickings, if they could be made to feel their individual accountability for the lost lives of thousands of innocent children!

The two papers on "*Air and some of its Impurities*," and "*The Ventilation of School-houses*," though by different authors, are interesting and profitable if read in connection. The compiler of the first, while distinctly recognizing the fact that carbonic acid gas is not the only, nor perhaps the most noxious, impurity in the air, free or confined, of our large cities, yet regards it as a sufficiently exact index or representative of the sanitary qualities of the particular atmosphere in which it is measured. He caused a series of careful measurements of this gas to be made in the air of various public buildings, schools, college recitation-rooms, offices, streets, and public squares. In the tables of results are carefully noted all the circumstances affecting each experiment. In view of the popular notion, so much insisted on and magnified by certain English savants, that the atmosphere is always loaded with organic germs, a distinguished microscopist was employed to thoroughly examine the air of Boston, with a view to determining the existence of such organisms. He failed to find them, and evidently believes the English observers allowed themselves to be grossly deceived. Certain particles which they supposed came from the air, he shows may have come from the water used to wash it. Certain others, having by their movement the appearance of life, he shows to be entirely inorganic.

The essay on ventilation as applied to school-houses is admirably prepared, and of great practical importance. It is wonderful and most lamentable to see how in this age of general enlightenment we still continue to sacrifice the health and lives of our children, for want of knowing or applying the simplest principles of ventilation. Thousands of children, in this city and in others, have their constitutions impaired, perhaps even ruined for life, by a process of slow poisoning, from the inhalation for several hours daily of air deprived of its due proportion of oxygen, and loaded with carbonic acid and still more deleterious emanations from hundreds of crowded and heated bodies. Too hard and too protracted study has doubtless injured many; but we believe that many more children really

owe their failing health to bad air. And, of course, an amount of study which in a fresh, pure atmosphere could be safely borne, might become excessive and injurious if imposed on a brain stupefied by a narcotic poison. Yet how few parents trouble themselves to visit the rooms in which their children pass weary hours, to ascertain whether the place is really fit to live in. Even when they see children growing daily paler and feebler, and are at last forced to take them from school, they rarely suspect that impure air may be the source of trouble; or if they do, they do not exert themselves to prevent the continuance of a state of things which may be causing disease and death among their friends and neighbours. When we are ready to trust to chance for the feeding and clothing of our children, we may consistently trust to the same source for the life-giving oxygen. But until then it is certainly wrong to pay no heed to the proper supply of this food for the lungs. Yet how constantly are school-houses, halls, and court-rooms built either in entire neglect of this need of the human frame, or with an absurd under-estimate of the provision needful, or with a lamentable ignorance of the means by which the desired end may be attained.

The examination of the water of the Mystic River was designed to ascertain the amount and kind of impurity caused by the draining of manufactories of various kinds into running streams. It is somewhat reassuring to drinkers of the Schuylkill water to learn that up to a certain point Nature corrects and removes what would seem at first to be a dangerous pollution. Dilution, and the chemical process of oxidation, are the means whereby noxious matters, up to a certain amount, are rendered harmless. But let us beware of going too far! The amount of decaying matter which the oxygen of running water can make innocuous is limited. Better never approach that limit, lest unhappily we pass it! Unless the streams whence our cities derive their supplies are most jealously watched, and guarded by appropriate legislation, they will become with each year more and more contaminated.

The brief report on "*Hoof-and-mouth Disease*" in cattle seems to prove that the use of milk from cows thus affected may cause not merely intestinal and general disturbance, but a definite disease, not usually severe, characterized by a vesicular eruption on the mucous membrane of the mouth, and, rarely, on the skin, together with febrile action. It is suggested that at times when milk is suspected, its wholesomeness may be insured by boiling.

Having glanced at the contents of this most interesting volume, we have now only to commend the example alike of the State which instituted the Board, and that of the men that compose it. Certainly it is not often that a good idea is better carried out. And if some of the facts in regard to the sanitary condition of the city of Boston are sad and alarming, we can all the more admire the candour of the men who did not allow pride in their noble city to blind their eyes or seal their lips. Even if city governments, with that strange apathy and indifference to duty which characterize them in this time and country—even if these heed not the warnings addressed them, yet the work of the Board, through the influence of physicians and intelligent men and women who learn of its objects and results, will surely affect the public mind; and at last force even common councilmen to act as if they had both brains and consciences.

B. L. R.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXIII.—*Guy's Hospital Reports*. Edited by C. HILTON FAGGE, M.D., and ARTHUR E. DURHAM. Third Series, Vol. XVI. 8vo. pp. xviii., 557. London: J. & A. Churchill, 1871.

IN inviting the attention of our readers to the present volume of the excellent series of Reports issued by the staff of Guy's Hospital, we shall pursue our usual plan of grouping separately the medical and the surgical papers. Beginning with the latter, we shall first consider—

Art. I. *Statistical Report on the Treatment of Subclavian Aneurism*, by ALFRED POLAND.—This paper, which occupies 130 pages, is a continuation of one published in the last volume of the Reports, and noticed in the number of this Journal for July, 1870 (p. 196); it is, moreover, itself to be continued in a future volume, so that when the whole is completed, we shall have a most thorough and exhaustive discussion of the important subject of aneurismal disease of the subclavian artery. Mr. Poland's plan is to consider successively the various modes in which subclavian aneurisms have been treated, and to examine the histories of the cases recorded under each head, so as to determine the mode of cure in the successful, and the cause of death in the unsuccessful cases. There are thus considered, in the present volume, in Section First, cases treated by *expectancy*, i. e., "spontaneous cures and failures, properly so called," and in Section Second, cases treated by *medical and general measures*, including those in which the plan of Valsalva was adopted; the summary of both these classes gives in all 35 cases, with 11 recoveries and 23 deaths, one patient having been benefited though not entirely cured. The treatment by *compression* is considered in Section Third, those cases being first grouped together in which pressure was made *indirectly* on the *cardiac* side of the aneurism, then those in which *distal* pressure was employed, and finally those in which *direct* compression was exercised on the aneurismal tumour itself. Section Fourth is devoted to the treatment by *manipulation* or *kneading* (originally practised by Fergusson), a plan which, as Mr. Poland justly remarks, is by no means free from danger, the principal risks being probably of rupturing or inducing suppuration of the sac, or of interfering with the cerebral circulation by causing embolism of the vertebral or carotid arteries; the latter accident is, for anatomical reasons, more to be dreaded when the aneurism is on the right, than when it is on the left side. The treatment by the application of *irritants* and *escharotics*, and by *galvano-puncture*, forms the subjects of Sections Fifth and Sixth, the former method being illustrated by one, and the latter by three cases of subclavian aneurism. The *hypodermic injection of ergotine* is the subject of Section Seventh. This method appears to have been used in but one instance (by Langenbeck), and though the patient was markedly benefited, the ultimate result of the case has not as yet been made known. In Section Eighth the treatment by injection of coagulating substances is considered—three cases, all unsuccessful; and in Section Ninth

the treatment by acupressure, illustrated by a single case (likewise unsuccessful), published by G. H. Porter, of Dublin. In Section Tenth are described "*attempts at operations for the cure of subclavian aneurisms*," embracing a record of four cases in which it was designed to tie the subclavian, and three in which an effort was made to pass a ligature around the innominate; in one of the latter cases the patient unexpectedly recovered, the aneurismal tumour having been only a quarter of its original size, and its pulsation almost imperceptible, when the report of the case terminated. Section Eleventh begins the examination of cases in which ligation has been employed, either on the cardiac or distal side of the aneurism, discussing in about 60 pages the histories of deligations of the third and second portions of the subclavian artery. The rest are postponed until the next volume of the Reports, when, in concluding his labours, Mr. Poland will doubtless give the result of his own mature reflections, as to the circumstances which in different cases indicate or contra-indicate any particular mode of treatment.

Art. II. *On Retro-peritoneal Hernia*, by P. H. PYE-SMITH, B.A., M.D.—Between the inferior mesenteric artery and vein, the left colic branch of the artery, and the abdominal aorta, is a more or less oval space to the left of the lumbar vertebræ, just "where the transverse part of the duodenum comes forward from its position across the spine, and ends by making the first free convolution of the small intestine—the duodeno-jejunal flexure. . . . Here there is very frequently to be found a semilunar fold or edge of peritonæum, with its concavity looking upwards and inwards, . . . continuous on its inner side with the peritonæum covering the transverse duodenum, and forming the inferior layer of the transverse mesocolon, below with that overspreading the inferior mesenteric and left colic arteries, . . . and on the outer side with the descending mesocolon." There is thus formed a fossa or pouch of variable depth, into which a hernia may readily occur, such a protrusion properly receiving the name of retro-peritoneal, as being behind the general cavity of the peritonæum. Prof. Treitz, who first drew attention to this form of hernia, has recorded eight cases observed by himself; in none of these, however, do there seem to have been any symptoms during life which could have been referred to the condition found at the autopsy. Dr. Pye-Smith has himself met with two cases, and several others are recorded in various pamphlets and periodicals, the most interesting being the case published by Dr. Ridge, in which strangulation occurred, and in which abdominal section was performed by Mr. Hilton; the symptoms were much relieved by the operation, but the patient, a boy of 14, died the same evening. Dr. Pye-Smith enumerates certain diagnostic points, derived by inference from a consideration of the anatomical conditions present, by observation of which he thinks the existence of a strangulated retro-peritoneal hernia might be recognized; we have not ourselves much confidence in any diagnosis which is not based upon clinical observation, and in fact, even as a matter of theory, any cause of acute obstruction which might affect this particular part of the alimentary canal would produce symptoms almost identical with those of the lesion in question. The treatment, should strangulation occur, would consist in placing the patient on his right side with the pelvis raised, so as to favour reduction by invoking the aid of gravity, and, as a last resort, in performing gastrotomy, or as German writers more accurately term the operation, *laparotomy*.¹ Two other varieties of retro-peritoneal hernia

¹ From *λαπαρά*, the soft part of the body below the ribs; the word gastrotomy is also applicable to the operation of opening the stomach.

are described by Treitz, designated respectively as the *inter-sigmoid* and the *subcecal*. Dr. Pye-Smith's paper is accompanied by a lithographic plate.

Art. IV. *Notes of Abnormalities observed in the Dissecting-room during the Winter Sessions of 1868-9 and 1869-70*, by P. H. PYE-SMITH, M.D., H. G. HOWSE, M.S., and J. N. C. DAVIES-COLLEY, M.C.—This paper has a certain value as a record of facts, but is not particularly interesting, unless to those who are engaged in the teaching of practical anatomy. The most important abnormality recorded (which is illustrated by a lithographic plate), is described as a "flat, broad bundle of fleshy fibres, which arose from the apex of the coracoid process, and was inserted, still fleshy, into the under surface of the clavicle, from the middle of that bone to within an inch of its outer extremity. There was no subclavius on this side; on the opposite side (the right) there was no trace of an abnormal muscle, and the subclavius occupied its usual position.

Art. X. *On the Treatment of Perforations of the Membrana Tympani*, by JAMES HINTON.—This paper may be considered as a sequel to Mr. Hinton's former communications in the 14th and 15th volumes of the Reports, on the Treatment of Accumulations of Mucus within the Tympanum, and on Catarrh of the Tympanum (see Nos. of this Journal for July, 1869, p. 192, and July, 1870, p. 199). Mr. Hinton adduces further evidence in favour of the plan of washing out the tympanic cavity by passing a stream from the meatus through to the nostril, and narrates a case in which the quantity of mucus thus evacuated was "quite inexplicable, except on the supposition that it had filled the mastoid cells and was being gradually washed out from thence." After the removal of mucus is complete, Mr. Hinton employs an astringent injection in the same manner; the substance formerly recommended was the sulphate of zinc, but having found this, even in the form of a weak solution, extremely painful, he now uses a warm solution of alum (gr. v—ʒj to ʒj).

Art. XIII. *Clinical Records*, by J. COOPER FORSTER.

"It is my intention each year," says Mr. Forster, "to give reports of the more important cases that have been admitted under my care, with a few observations upon each of them. . . . Records of cases, to be of much value, . . . must be taken under the supervision of the surgeon, who is answerable for their truthfulness, and must also superintend constantly, if he does not absolutely take the reports himself."

Perceiving the laudable zeal manifested in the sentences above quoted, and observing that, since the publication of the last volume of the Reports, Mr. Forster has been promoted from the rank of assistant to that of full surgeon, we are involuntarily reminded of what is said of the new broom: let us hope, however, that the implied sequel of the proverb will not be in this instance verified, and that Mr. Forster will continue, in future years, to sweep his note-books for our benefit, not less effectually than he has done on the present occasion.

Twenty-one cases of more or less interest are here narrated, and made the subject of a running commentary of a very practical and judicious character. We observe with satisfaction that Mr. Forster recommends for the treatment of fistula in ano the safe and simple operation with the grooved director and scalpel, rather than the old-fashioned procedure with blunt-pointed curved bistoury and finger in rectum. In the after-treatment a piece of lint is simply placed in the wound, the daily packing of which is considered unnecessary: we believe that advantage may be derived from thoroughly wiping out the wound, immediately after the operation, with the solid stick of nitrate of silver, or some similar substance, thus at once checking hemorrhage, preventing prema-

ture adhesion (by causing the formation of a linear slough), and bringing the callous walls of the fistula into an apt condition for the reparative process.

Our limits will not permit us to examine, as we should like to, all of Mr. Forster's cases, which we must content ourselves with simply enumerating: the first is a case of syphilitic tumour of the thigh; then follow two cases of anal fistula (to which we have already referred), one of spinal caries which proved very rapidly fatal, two of abdominal injury, two of syphilitic ulcer, one of lacerated wound of the thigh, two of abscess, four of urethral stricture, one of unreduced luxation of the elbow, one of synovitis following a wound of the knee-joint, one of chronic mammary tumour, one of cartilaginous tumour of the thigh, and two of epithelioma. We regret that Mr. Forster has described one of his cases of syphilitic ulcer under the name of *rodent ulcer*, this term being by common consent almost exclusively appropriated to the peculiar form of ulcer originally described by Jacob, of Dublin, and which, whether cancerous (as maintained by the late Mr. Moore) or otherwise, is at least certainly *not* of syphilitic origin.

Art. XVIII. *A Description of the Appearances of the Human Eye in Health and Disease, as seen by the Ophthalmoscope. Fifth Series. Syphilis*, by C. BADER.—Two coloured plates, embracing eight figures, accompany this paper. The following is Mr. Bader's summary of the treatment applicable in cases of deep-seated syphilitic disease of the eye:—

"Wherever within the eye the morbid changes be situated, whether the iris or cornea be implicated or not, have the pupil kept well dilated by atropia, and continue this for three or four weeks from the time when the attack commenced.

"One or two leeches to the temple at bedtime will relieve pain, should the effective use of atropia, as shown by the dilatation of the pupil, not have done so.

"The inconvenience arising from intolerance of light should be obviated by the use of blue-tinted spectacles.

"No near work, reading, etc., should be allowed while inflammatory changes are existing. Once the atrophic spots have appeared, the free use of the eyes may be permitted.

"General medical treatment should be tried in all cases. Mercury during the formation of lymph and effusion, and iodide of potassium after this stage has passed, are freely given at Guy's.

"The patient should live well, but, while under medical treatment, should abstain from malt liquor.

"If, within four to six weeks, no marked improvement of sight ensues, little hope remains. Iridectomy can be recommended if the tension of the eyeball is increased."

Art. XIX. *Miscellaneous Surgical Cases. Cancer of the Femur; Fibro-cellular Growth in the Thigh; Enchondromatous Tumour of the Thigh; Exostosis of the Femur; Thyroidal Tumour of the Neck; Hydrocele simulating Hematocele; Cystic Myxoma of the Testicle*, by ALFRED POLAND.—These cases are all very interesting, though perhaps the most so are the third, fourth, and fifth. The *enchondromatous tumour of the thigh* occurred in a man aged 35, and grew near the base of the greater trochanter, in front of the hip-joint, which was opened in the operation for the removal of the morbid growth; the patient notwithstanding made a good recovery, and, when he left the hospital, the motions of the wounded articulation were unimpaired. The *exostosis of the femur* grew from the inner condyle of that bone in a man aged 25, and was the seat of a fracture complicated with subcutaneous wound of the knee-joint, which was punctured by the broken-off bony growth. The fractured ends united in the course of eight weeks, when, the joint being free from inflammation, the exostosis was safely removed. The *tumour of the neck*,

which appeared to be a morbid growth attacking an outlying portion of the substance of the thyroid gland, was successfully removed by enucleation, the patient, a married woman aged 43, making an excellent recovery, the appearances of the tumour to the naked eye, and when placed under the microscope, are shown by means of wood-cuts.

Art. XX. *A Case of Exostosis of the Frontal Bone, growing into the Cranial Cavity*, by JOHN BIRKETT.—After referring to the ordinary division of frontal exostoses into the compact or ivory, and the spongy or cancellous varieties, Mr. Birkett suggests, as of greater practical utility, a classification according to the part from which the tumour originates, making thus four groups, viz.:—

- “1. Growths from the outer table.
- “2. Growths from the inner table.
- “3. Growths by which both tables are involved.
- “4. Growths from the diploë, really enostoses.”

Mr. Birkett purposely excludes “those remarkable and very rarely seen masses of bone of extreme ivory hardness developed in relation with the frontal sinuses,” believing that “there is some ground for the assumption that such osseous masses do not spread out from the bony walls of those cavities originally, although, in consequence of the few preparations of those growths in existence never having been completely examined, the existence of a pedicle cannot be positively denied.” In connection with this subject, we would invite our readers to refer to an interesting critical review, “On Osteomata of the Nasal Fossæ and Sinuses of the Face,” by Henri Rendu, which appeared in the number of the *Archives Générales de Médecine* for August, 1870.

Mr. Birkett's case, which was certainly a very remarkable one, occurred in a healthy-looking girl of 15, who presented a large frontal swelling, with displacement of the left eyeball; from a small aperture, at the site of the inner and upper angle of the left orbit, there was a slight flow of muco-pus, which evidently came from the frontal sinus. Some months before her admission to Guy's Hospital, the girl had suffered intense pain for some days, the attack culminating in a state of insensibility, which lasted twenty-four hours. After keeping the patient under observation for some time, Mr. Birkett incised the tumour, laying open a frontal sinus, from which he hoped to be able to remove a growth of bone; in this, however, he was disappointed, though the patient was none the worse for the operation, leaving her bed on the eleventh day. On the twenty-fourth day she had a convulsion, attended with insensibility, and from this time her condition was that of a person suffering from acute cerebral inflammation, death ensuing a fortnight later. The autopsy revealed abscesses in both anterior lobes of the brain, that on the left side being evidently one of considerable duration, while that on the right side was comparatively recent. An exostosis was found, which was of the cancellous variety, and implicated the cranial cavity as well as the orbit and nostril. “The starting-point of the growth appears to have been the cancellous tissue between the layers of the bone forming the posterior wall of the left frontal sinus, or the whole of that lamina of bone.” In its growth, the tumour had displaced the eyeball, and, by occluding the communication between the nose and frontal sinus, had caused distension of the latter cavity by the accumulation of its own secretion. No connection could be traced between the morbid growth and the cerebral abscesses. Mr. Birkett's paper is accompanied by three lithographic plates.

Art. XXI. *A Case of Immobility and Deformity of the Lower Jaw, resulting from Sloughing of the Cheek after Fever; Remedied by Operation*, by ARTHUR

E. DURHAM.—The patient was a man aged 37, who, in childhood, had lost, in the way described, the left half of the lower lip, a portion of the upper lip, with the adjoining part of the cheek, and a portion of the left upper maxilla. The operative treatment consisted in freely separating the soft parts from the bone, excising a broad V-shaped segment of the lower jaw with five teeth which projected (the lower border of the bone being, however, preserved), and, after separating the jaws with the lever of Scultetus, cutting away the edges of the gap, and closing the wound with harelip-pins and sutures; the first operation was only partially successful, on account of the patient's neglecting to practise passive motion of the jaw, a fistulous opening also remaining in the lower lip; a second operation was attended with better results, the deformity being almost entirely removed, and the patient, when last heard from—about two and a half years subsequently—retaining excellent use of the part.

Mr. Durham terminates his paper with some judicious practical remarks as to the superiority of sliding operations (*par glissement*), in plastic surgery, to those by transplantation; as he epigrammatically expresses it, it is better to "fine draw" than to "put on a patch." The appearance of Mr. Durham's patient before and after treatment is exhibited in a lithographic plate.

J. A., JR.

We shall next invite attention to the medical papers in this volume.

Art. III. *On Left-handedness*, by P. H. PYE-SMITH.—It was formerly thought that left-handedness was always associated with transposition of the viscera. This opinion, although it has received the sanction of Prof. Hyrtl, of Vienna, is no longer held, nor does that modification of it which attributes the peculiarity to an abnormal origin of the primary branches of the aorta find many advocates at the present day.¹ After a brief review of these theories, Dr. Pye-Smith proposes the following, which is certainly ingenious:—

"In default of any better suggestion, might one suggest an hypothesis of the origin of right-handedness from modes of fighting, more by way of illustration than as at all adequate in itself? If a hundred of our ambidextrous ancestors made the step in civilization of inventing a shield, we may suppose that half would carry it on the right arm, and fight with the left, the other half on the left, and fight with the right. The latter would certainly, in the long run, escape mortal wounds better than the former, and thus a race of men who fought with the right hand would gradually be developed by a process of natural selection. Such a race would naturally use the right hand also when they discovered how to draw and to write, though, to push the fancy further, we might regard the Chinese way of writing as that of a lingering left-handed race, and the old Greek alternate fashion as a still more ancient ambidextrous method."

Art. V. *Some Observations on an Outbreak of Diphtheria in the Obstetric Ward*, by J. BRAXTON HICKS, M.D., F.R.S.—This paper contains the notes of eight cases of diphtheria, which occurred in the obstetric ward of Guy's Hospital in December, 1870. About a week before the first case occurred, a woman in the ward, who had undergone a surgical operation, had a mild attack of scarlatina, and Dr. Hicks calls attention to the frequent association of these two diseases, but is unable to say in what the connection between them consists. The cases occurred within a fortnight of one another, and although the majority did not present the usual symptoms of the disease, yet there can be no doubt that in all of the patients the evidences of blood-poisoning that were presented were due, in great measure, to the baneful influences of the poison of diphtheria.

¹ A case of complete transposition of the viscera, in which the patient was not left-handed, is reported in the number of this Journal for July, 1868.

In every case, the patient had been the subject of an operation. The following were the symptoms observed in one of the patients, from whom, a short time before, Dr. Barnes had removed a fragile calculus. She went on well for about three days, when she complained of being feverish, and tender in the urethra. On examination, the parts, which had been abraded, were covered by diphtheritic layers running up to the bladder. In a few days, cystitis came on. To relieve the pain, morphia was injected into the arm. The spot inflamed and suppurated. About three days after this a swelling over one knee came on. Matter in a day or two was formed and let out. On her shoulders, also, the same occurred. In the meantime, her constitutional symptoms became very severe, and it was evident that pyæmia was present in its worst form.

Art. VI. *On some Cases of General Paralysis, with a few Remarks on Nerve Pathology*, by SAMUEL WILKS, M.D., F.R.S.—This paper contains, as its title indicates, reports of several cases (six in number) of general paralysis. This term, the author thinks, has been too exclusively applied to the affection which has been called by the French “*paralysie*” or “*folie ambitieuse*,” since there will be found in every general hospital a certain number of patients who present a universal muscular paresis, with or without some impairment of the mind, and this impairment of the mental power, when it exists, more frequently shows itself in imbecility than in exaltation of the ideas. The name dementia paralytica expresses the condition of these patients.

Dr. Wilks is evidently not in favour of specialties, for he attributes much of the confusion which has arisen on this point to the fact that alienists see only those cases of general paralysis in which the patient has exalted ideas, while the other, and, he thinks, more numerous cases, remain under the care of the general practitioner. The only point of distinction between the two classes is, therefore, that in the former the symptoms of mental derangement precede those of loss of power, for the patient, who is generally recognized as insane, will generally sooner or later lapse into a condition of complete fatuity. The post-mortem appearances do not differ essentially in the two classes of cases. In both there will be found a degenerated or shrivelled condition of the brain, to which is generally added, in the cases of those who have during life presented symptoms of *folie ambitieuse*, some evidence of former inflammation of the membrane. “May it not therefore be,” he says, “that a simple decay may carry along with it mere imbecility, but that if the destruction has been produced by a chronic inflammatory process, the mental alienation is peculiar, and attended by exalted ideas.” In the first case which he reports, the paralysis was attended by maniacal symptoms; in Cases 2, 3, and 4 there was absolute dementia, and no exaltation of the ideas; in No. 5 there was no mental affection whatever, and in No. 6 there was a maniacal state without delusion.

In the first part of the paper, Dr. Wilks discusses various points in nerve pathology at considerable length. To present our readers with a satisfactory abstract of this discussion, would require more space than it seems desirable to devote to the subject.

The existence of trophic nerves has not been positively proved, and we know still less in regard to the origin of these nerves. Dr. Wilks thinks, however, that there is proof almost amounting to demonstration that they do not arise from the spinal medulla; for although in paraplegia, atrophy is often seen, we frequently meet with the former without any active wasting, which tends to show that complete destruction of the cord may occur in any one part without nutrition being directly affected. If, however, any injury has occurred to the trunk of a motor nerve, wasting will quickly supervene. An illustration of this is seen in the atrophy of the deltoid, which follows falls upon the shoulder,

causing injury to the circumflex nerve. In the disease known as progressive muscular atrophy, although we are unable to appreciate any change in the large nerve-trunks, yet it is evident that the motor nerve-fibres are at fault, for when we trace them up to the spinal cord, we find the anterior root diminished in size, and should the muscles supplied by the lingual nerve be affected, then the latter will be found evidently to have undergone an atrophic change. In reference to this point, Dr. Wilks asks the question, would the effect on the nutrition of the legs be the same if the cord were cut through at its lowest part as if the plexuses proceeding from it were divided? He is himself inclined to believe that wasting would occur only in the latter case. There are other questions which still remain unsettled. For instance, our knowledge of the physiology of the nervous system does not enable us to say whether there are separate filaments for the vaso-motor nerves, and whether the nerves which transmit impressions to and from the spinal cord are the same as those which perform a like office for the brain; and we are equally ignorant of the manner in which the different sensations are conveyed to the sensorium, although we know that the perception of one kind of sensation may be lost, without loss of that of others. It would seem reasonable to suppose that the different sensations are transferred from the periphery to the central organs by means of different nerves.

Art. VII. *Adherent Pericardium as a Cause of Cardiac Disease*, by SAMUEL WILKS, M.D., F.R.S.—In this paper six cases are reported in which death occurred from adherent pericardium. This, Dr. W. is disposed to think, is a more frequent cause of cardiac disease than is generally supposed; for although the subject has been fully discussed in some of the earlier volumes of this work by Dr. Chevers and the late Dr. Barlow, and considered by Drs. Hope and Stokes, yet no allusion is made to it in many of the text-books of medicine. So far as Dr. Wilks' observation has enabled him to decide the question, loose adhesions exercise no prejudicial effect upon the heart, but, on the other hand, a thickened pericardium of a cartilaginous consistency investing the heart closely, arising from an inflammation at an early period of childhood, does lead to obstruction of the circulation, and then to dropsy, after the ordinary manner of heart disease. These cases, where no valvular lesion exists, are very difficult to diagnosticate, and are therefore of great clinical and pathological interest. Dr. Hope has stated that he has never met with a case of complete adhesion of the pericardium without finding enlargement of the heart, generally hypertrophy with dilatation. Dr. Stokes, on the contrary, did not think that there were necessarily any manifest changes in the condition of the heart, or where alteration of the muscular condition of the heart is found in connection with this obliteration, that it is necessarily a state of hypertrophy, but, on the contrary, is often one of an opposite nature; and Dr. Chevers goes even further, for he says that obliteration of the pericardial cavity tends to cause diminution of the heart and the great bloodvessels. The six cases reported in this paper show that pericardial adhesion of great extent may exist without giving rise to any manifest alteration in the condition of the heart, even in cases in which during life there has been great obstruction to the circulation. And that when alterations do exist, that they are by no means the same in all cases.

We have been ourselves always inclined to doubt the generally received theory that the tendency of pericardial adhesions is to produce hypertrophy of the heart, believing as we do that the lesion interposes an impediment to the free action of the heart. This, it can readily be understood, differs decidedly in its effect from an obstruction to the circulation. In the latter condition there is an attempt, usually successful, to overcome the obstruction by an increased

development of force. In the former, on the other hand, the tendency of the lesion is not merely to prevent the development of more power, but also to prevent the exercise of that which already exists. This is especially the case wherever, in addition to pericardial thickening, there is added fibroid degeneration of the outer muscular layer of the heart.

Art. VIII. *Notes on the History of Valvular Diseases of the Heart*, by SAMUEL WILKS, M.D., F.R.S.—This paper, which is a short one, is wholly devoted to the discussion of “questions affecting the priority of discovery of the more important lesions of the heart, especially those known as aortic regurgitations and mitral obstructions.” The priority in the case of aortic insufficiency Dr. Wilks gives to Dr. Hodgkin, who described the lesion very accurately, and gives an excellent account of the symptoms which it produces, in a paper read before the Hunterian Society in 1827, and published in the *Medical Gazette*. On the other hand, he shows very clearly that Laennec, although not appreciating the exact time at which it occurred, was fully aware that constriction of the mitral orifice was attended by a murmur.

Art. IX. *On Syphilitic Disease of the Spinal Cord*, by W. MOXON, M.D.—Not many cases of syphilitic disease of the spinal cord have been recorded, especially cases in which the diagnosis has been confirmed by the results of the autopsy. The case, therefore, which forms the nucleus of Dr. Moxon's paper is of value, the more so, as the course of the disease seems to have been unusually rapid. The patient, a man of 30, had contracted syphilis seven years before coming under observation. Secondary symptoms manifested themselves, but were slight. The illness, which terminated fatally, began only six weeks before his death, when, after a sharp attack of diarrhoea, he first experienced a sensation of “pins and needles” in his left foot, followed by numbness and weakness, which in the course of a day or two extended up to the groin. The right foot was similarly attacked, the numbness and weakness in like manner extending up the leg. Soon after, the lumbar regions were the seat of intense pain, and there was inability to retain feces or urine. On admission, it was found that sensation was lost below the crest of the right ilium, and on the right side below the groin; reflex action was still excited by a sharp blow; he was unable to stand; there was feeble electro-muscular contractility, but no electro-muscular sensibility. A short time before his death a bed-sore formed over the sacrum, and the anæsthesia had extended higher, reaching to the level of the ninth rib on the right side, and to the crest of the ilium on the left side. From the report of the autopsy we shall abstract the following relating to the appearances of the spinal cord:—

“The pia mater generally showed no change, but through it could be seen several brownish or blackish patches of a size from the outline of a barley-corn to a pea. These patches felt distinctly firmer than the surrounding parts of the cord. The cord itself in the lower three-fourths was very soft, but in the upper fourth was rather remarkably hard. The patches were in the lower half of the cord, none being present above the middle dorsal region. On section of the blackened spots, these were found to consist of dark, tough, flaccid matter, in the centre of which lay small, yellowish, elastic, soft, gummatous spots, abrupt and differing in consistence from the dark matter around, so that in section these yellow spots rose into semicircular form, looking like little drops of pus, yet on touching them they were found elastic and solid. They paid no regard to the component columns of the cord, some being in the posterior and some in the lateral column; there were fewer in the anterior column; none were above the middle dorsal region.”

Dr. Moxon agrees with Dr. Wilks in thinking that there are no characteristic microscopic elements of syphilitic formation, but says the appearances we see

by the naked eye are distinctive. It will be found, he says, in visceral syphilis, that—

“1. Generally a small part of the organ is attacked, and the remainder is quite free—the disease is strictly localized in the spot it affects. 2. Its outer part is composed of fibrous tissue, which can be seen to represent the natural fibrous supporting elements of the part in a state of augmentation, while the functioning elements of the part have dwindled away. It is a local sclerosis. 3. Its central part shows the now celebrated caseous or gummatous faint yellowish matter of more and more elastic consistence and less and less friability and curdiness, generally rather sharply distinguished from the fibrous outer part, and sometimes softening down or calcifying. 4. There are signs of more acute inflammation in the immediate neighbourhood, showing lymph, &c., or adhesions to the parts around. (3 and 4 may be absent.) Such patches, sharply contrasting with more healthy tissue immediately about them, and (5) distributed more or less widely in a variety of organs, but especially in the testes and liver, are not a general thing that could be passed over as a common accident.”

In the case reported by Dr. Moxon, the anæsthesia extended as high on the right side as the eighth dorsal nerve, while in the large proportion of the cases of common softening of the cord it is limited above by about the course of the twelfth dorsal nerve, and is about equal on the two sides. This shows that the syphilitic changes sometimes affect a portion of the cord higher up than that usually involved in softening.

The symptoms observed in syphilitic disease of the nervous system vary very considerably both in duration and importance. Some symptoms come on suddenly and disappear with a like quickness. Others arise slowly, and increase gradually, and persist tenaciously. Passavant explains the first set of symptoms by supposing that a thickening of the arterial coats has taken place, and that an obstruction has been thus interposed to the due supply of blood to a part of the brain. This thickening need not be a permanent condition, and hence the effects to which it gives rise may disappear. On the other hand, the nerve affections in syphilis, which prove permanent, are those which point to direct syphilitic changes in the nervous substance itself. The vague character of the symptoms of syphilitic disease of the cord is well shown by the reply which he makes to his own question. “What, then, are the proper symptoms of syphilitic disease of the cord? That they are the symptoms of syphilis and the symptoms of cord disease.”

The case reported in this paper disproves the statement made by Lanceraux that tertiary syphilitic lesions of the spinal cord, while they paralyze voluntary motion, generally leave intact, in part at least, the sensibility, and, above all, the reflex movements, of the extremities. Dr. Moxon has, moreover, not found that tabes dorsalis often occurs in syphilitic persons. On the other hand, it frequently exists in patients who have never had syphilis.

In regard to the treatment, Dr. Moxon says that he has always given a drachm of iodide of potassium in divided doses in the course of the day, and that it is better to administer it in these quantities even in doubtful cases, for even if the case should prove ultimately not to be of syphilitic origin, no harm can accrue from the taking of the drug. It should be distinctly remembered, however, that this remedy, although having the power to check the development of the disease, and consequently to prolong life, is not able to remove it altogether. The failure of the iodide can be readily understood by a careful study of the changes in the nervous system, which do not consist in a deposit, or, to use Dr. Moxon's own words, what is called a deposit “is not a lodgement of syphilitic matter among the proper elements of the part, it is a change of these elements into the syphilitic matter. . . . Syphilitic gumma is a destructive change as

regards the functionary elements of tissues, although it may prove constructive in bone or fibre-tissue. This is no contrariety. It is a rule that inflammation, while it is productive of fibre-elements and their allies, bone, &c., is destructive of gland-cells, nerve or muscle fibres, and their allies."

Art. XI. *On the Murmurs attendant upon Mitral Constriction*, by C. HILTON FAGGE, M.D.—The author presents us in this paper a detailed account of the physical signs in all the cases of mitral constriction, 67 in number, which have presented themselves at Guy's during the last four years. Some of these cases are of great interest, and the paper is one of the most valuable in the volume. The principal characters which he assigns to the mitral constrictive murmur are: 1. It is always presystolic. 2. It is best heard over the apex of the heart, and is generally confined to the region of the apex. 3. It has a peculiar *quality*—it is rough, churning, or grinding, &c. It is frequently accompanied by a marked palpable thrill or *fremissement*. 4. It is frequently brought out or greatly increased when the patient is made to undergo moderate exertion. Frequently, too, at the base, the second sound is perfectly clear, or perhaps appears to be reduplicated, but as the stethoscope is carried downwards the double sound acquires more and more the character of a murmur, until at the apex it becomes the harsh, churning bruit so characteristic of mitral contraction. The first sound of the heart has also in many cases of mitral contraction a well-marked peculiarity. It is said to be very clear, sharp, and ringing. It thus comes to resemble very closely the normal second sound, and this resemblance is, of course, strengthened by the fact that it is preceded by a prolonged droning murmur, which may easily be taken to be systolic in rhythm if the auscultator be not careful at the same time to feel the carotid pulse. It is usually recommended that the fingers should be placed on the radial artery whenever the heart is examined. Since, however, the systole of the heart precedes the radial pulse by a distinct interval, and since this interval is very much increased in disease, the observer will frequently fall into an error if he follow this rule. Mistake may, however, always be avoided by using the carotid pulse as a point of comparison.

A very full review of the literature, both English and foreign, of this subject, follows, after which the histories of 66 cases are given in more or less detail. These cases are divided into three heads:—

1. Cases in which a direct mitral or presystolic murmur was heard during life, and in which the mitral orifice was found after death to be contracted. Six or perhaps seven cases.

2. Cases in which the mitral valve or orifice was found after death to be narrowed, but in which no presystolic murmur had been heard during life, 40 in number.

3. Cases in which a presystolic murmur was recognized by auscultation, but in which no opportunity was afforded of verification by post-mortem examination, 19 in number.

Fifteen of the patients included under the second head died within a few hours of their admission to the wards. In the remaining twenty-five the pulse was extremely rapid, and the action of the heart very irregular, it was consequently impossible to arrive at an exact determination of the heart-sounds and of their rhythm.

From a careful consideration of these cases, Dr. Fagge thinks that he is justified in drawing the following conclusions:—

I. The positive value of the direct mitral or presystolic murmur is very great.

II. Very little importance can be attached to the *absence* of a presystolic bruit, as *disproving* the existence of mitral contraction.

In regard to the causation of this lesion, the author says he has been struck by the comparative rarity with which one obtains a history of a past rheumatic attack from a patient in whom a presystolic bruit is audible. Thus, among the seven fatal cases related under the first head, there was only one in which the most careful inquiry succeeded in eliciting the fact that the patient had ever had rheumatism. In the remainder of the patients whose histories are related in this paper, a much larger proportion had had rheumatism, although some in whom the murmur was peculiarly distinct and well marked, presented no such history. These facts tend undoubtedly, he thinks, to favour the view that in a large proportion of cases the contraction of the mitral orifice is due to some cause other than the mere circumstance that the endocarditis of a past rheumatic attack had fallen with especial severity on the mitral valve. In some cases it would appear that narrowness of the mitral valve may be a congenital defect, but in the majority of cases he is disposed to believe that the contraction of the valves, and the thickening and adhesion of the chordæ, are the results of a very slow process, not attributable to any cause at present known, and essentially one of chronic inflammation. This view is borne out by the fact that the dyspnoea and palpitation, so commonly present in cases of mitral constriction, were generally said by those patients who had never had any rheumatic affection, to have come on very slowly.

Dr. Fagge has also been struck with the frequency of arterial embolism in contraction of the mitral valve. In five out of the seven fatal cases, there had been embolism either of one of the cerebral arteries, or of some artery of the lower limb. The embolism appears to have been in some instances a portion of an ante-mortem clot from the auricular appendix; more often it was a mass of vegetations detached from the valve; and this, perhaps, is the reason why it has more than once been large enough to obstruct the artery of the thigh.¹

No indications of the existence of the disease are furnished by the pulse; in the latter stages, it is true, the pulse is often very small and irregular, but this peculiarity may accompany a feeble, dilated heart, or any of the other lesions which may give rise to cardiac dropsy.

The paper concludes with the description of "certain rare changes in the cardiac rhythm," which the author believes can be shown to be essentially modifications of the presystolic murmur, and to be merely indicative of the existence of mitral contraction. Our notice is, however, already too long, and we must, therefore, refer our readers to these remarks, which will be found of great interest. Dr. Fagge takes occasion to say that no case is on record in which the presystolic murmur occurred without there being found after death contraction of the mitral orifice. In an article "On Mitral Direct Murmur," contributed to the *Bellevue Hospital Reports*, Dr. Flint refers to two cases in which this murmur was observed, its character unmistakably present, and its intensity variable, and, on post-mortem examination, the mitral orifice was free from any lesion, but in both these cases there was aortic regurgitation.² This paper Dr. Fagge appears not to have seen.

¹ An interesting case, reported by the writer of this notice, will be found in the Proceedings of the Pathological Society of Philadelphia, in *The American Journal of the Medical Sciences*, October, 1863.

² The explanation of the murmur, when occurring under these circumstances, is as follows: "Assuming that free aortic regurgitation takes place, the quantity of blood returned into the left ventricle immediately after the systole may be sufficient to float and bring together the mitral curtains, which are then thrown into

Art. XII. *Cases of Puerperal Convulsions treated without Bleeding*, by J. J. PHILLIPS, M.D.—The results obtained in the treatment of puerperal convulsions are certainly unsatisfactory enough, and this paper is written for the purpose of reporting eight cases in which recovery followed the administration of chloroform by inhalation. The examination of the urine showed the correctness of the observations of others as to the almost constant coexistence, but temporary duration, of albuminuria. In only one case was the albumen persistent. In addition to other advantages of the treatment by chloroform, which are stated in the conclusions, Dr. Phillips thinks that it is “of great value in preventing or diminishing the secondary congestions and the exhaustion, which are universally admitted as the dangers to be apprehended from convulsions.” The paper concludes with the following propositions:—

“That bleeding has no claim to be regarded as a remedy for puerperal convulsions; and that, in the majority of cases at least, if seen at an early period of the attack, it is unnecessary.

“That bleeding is often injurious, by predisposing to various puerperal ailments, by retarding convalescence, and sometimes by increasing the violence of the paroxysms. Also that the present diminished mortality is probably chiefly due to the less free depletion which is now practised.

“That the chief reliance should be placed on chloroform, which prevents the recurrence or diminishes the violence of the paroxysms.

“That in mild cases it is sufficient to keep the patient slightly under the influence of chloroform in the intervals, more being given when indications of a fit are seen; but that in severe cases the patient should be kept for a time uninterruptedly under its influence.

“That if convulsions have already produced much pulmonary congestion, it is beneficial to withdraw a few ounces of blood before administering chloroform; and that generally it is advisable to lessen the tendency to cerebral congestion by the application of cold to the head.

“That it is rarely necessary to interfere with labour before the os uteri is dilated, or in those cases where the convulsions precede labour; but that it is usually expedient in the second stage to complete delivery, due regard being had to the condition of the uterus.”

Art. XIV. *On some Obscure Forms of Abdominal Disease*, by S. O. HABERSHON, M.D.—Under this head Dr. H. considers—1. Abdominal Aneurism; 2. Pyloric Disease; 3. Perihepatitis; and 4. Fixed Abdominal Pain. Of the first, he reports three cases, all of them illustrating the obscurity of the early symptoms of the disease. In every case there was a distinct history of syphilis, and there can be no doubt that the primary affection of the aorta was dependent upon this cause. The age most liable to this form of arterial disease is below forty, during the prime of life, whilst the muscular power can be put forth in violent exertion. As is well known, the diagnosis of an abdominal aneurism may sometimes be exceedingly difficult. The tumour is generally more or less spherical, it is yielding to the touch, and expands in all directions with the cardiac systole. It is generally situated in the upper part of the abdomen, near to the left hypochondriac region, commencing above and extending in a downward direction. A systolic bruit may be heard in an aneurismal tumour; but pulsation occurring directly after the diastole of the heart, is regarded by Dr. Stokes as of still more diagnostic value. The absence of cachexia and of general disturbance of the system is very observable in aneurismal disease. The countenance is expressive of pain. The pain is sometimes so intense that it

vibration by the direct mitral current, exactly as the lips are made to vibrate with the expired breath, in this way producing a murmur.” (Bellevue Hospital Reports, vol. i.)

may produce fatal exhaustion, as in a case of Dr. Barlow, in which, after death, the vaso-motor nerve was found spread out like a web upon the sac. There is a great want of regularity of the symptoms, and the functional disturbance of the abdominal viscera may be intense in one case and absent in another.

In regard to the treatment, Dr. Habershon says:—

"If the aneurismal sac can be isolated, the plan advocated by Dr. Murray may be adopted, namely, of placing the patient under the influence of chloroform, and then of applying pressure so as to check the circulation; but aneurismal disease is generally near to the diaphragm, or is situated deeply in the left hypochondriac region, where pressure could not be applied, or, again, as in the first place, it may be behind the aorta, so that the sac itself could not be compressed. Quietness, rest, opiates, the avoidance of excitement, of fatigue, or of exertion, are the best remedial measures that we can employ. The use of acetate of lead, of iodide of potassium, or other drugs, does not appear to check the progress of the disease."

Three cases of pyloric disease are reported. In the first of these the pylorus was very much thickened; the submucous cellular tissue was an inch in thickness, white, fleshy, œdematous, and without cancerous juice, the thickening becoming gradually less, but reaching nearly five inches from the pylorus. The microscope showed that the greater part of the white tough substance was composed of organized fibrous tissue, but in part the substance was a more delicate tissue, with numerous small spindle-shaped cells with very long tails blending in the intercellular fibroid or fibrillated texture.

One case only of perihepatitis is given; a few pages are, however, devoted to the discussion of the nature of this disease, its symptoms, causes, and treatment.

Among the many conditions which may give rise to "Fixed Abdominal Pain," are diseases of the vertebræ, inflammation in the parietes, chronic diseases of the intestines, diseases of the liver and kidneys, in which the surface of these organs is affected, or in which tension is produced, various diseases of the genital apparatus in the female, and abdominal tumours of different kinds. In addition to these, we have other forms of disease which produce fixed pain, the peculiarity of which is that the patient is able to go about nearly as usual; the functional disturbance is comparatively insignificant, but occasionally the suffering is severe and intense.

These causes are as follows:—

1. "Adhesions of an inflammatory character.
2. "Chronic local and inflammatory action, especially in the posterior part of the abdominal parietes, at the quadratus membrane behind the cæcum or behind the kidneys.
3. "A fixed position of the intestines, as when the transverse colon is more convex than normal, when the omentum is dragged down to the inguinal canal or to the femoral ring, and when the sigmoid flexure slips down into the pelvis."

The histories of four cases are given, in which a fixed pain in the abdomen depended upon one or other of these conditions. The paper, although valuable from the number of cases which are reported in it, is scarcely equal in interest to the majority of Dr. Habershon's contributions to the series.

Art. XV. *On the Relation between Chemical Decomposition and Nutrition*, by JAMES HINTON.—Mr. H. asks the following questions:—

"Does the first organic matter 'impart its force' and thereupon decay? Or does it undergo decay, as representing a 'tendency' of the elements, and so come to impart its force?"

"There is no doubt," he says, "that, with our accustomed ideas of the properties of matter, the latter is the view into which we most readily fall. But

on reflection it by no means appears clear that it is the true one. Granting an 'inherent chemical affinity' leading, *e.g.*, oxygen and hydrogen, to combine into water, there would be a certain natural order in beginning with it. But this conception is one which science now repudiates. The tendency of oxygen to unite with hydrogen is not an inherent property, it is determined by antecedents, and depends on relations apart from those elements. Decomposition, we know, will not take place except under certain conditions. Now, when vitalization of another portion of matter ensues upon such decomposition, may not the possibility of this vitalization be precisely the condition which allows or determines the decomposition."

Art. XVI. *On the Nature of Atheroma in the Arteries, with a Description of a Remarkable Case of Arteritis*, by W. Moxon, M.D.—In England, Dr. M. says, the word atheroma carries with it a meaning of degenerative rather than active changes. On the Continent, however, a very opposite view of its nature is held. After a careful review of the literature of this subject, he decides that the weight of evidence is in favour of the view which makes atheroma a consequence of inflammation, a view which is still further sustained by the microscopic examination of the diseased arteries. He gives us a good many reasons why there has existed so much confusion on this point. Among others, the ignorance and doubt that even now prevail as to the nature and mode of nutrition of the inner arterial coat in its normal state. "Is it," he asks, "formed from the blood that flows in the vessel? Is it naturally covered within by such a deposited formation?" He believes that it is so formed. The kind of evidence on which this is based is well illustrated by the history of a case read before the Royal Medical and Chirurgical Society, and of which a notice appeared in the No. of this Journal for April, 1870, p. 480.

In this case "the blood had made its way between the *media* and *externa* down the thoracic and abdominal aorta, creating thus a new false aorta, that made, with the original and still pervious one, a pair of tubes very like a double-barrelled gun, the false channel re-entering at the iliaes on each side. Now, it was remarkable that the false aorta had as good a lining as the true one, as smooth, and of the same pellucidity; and the likeness was carried further by the presence in this false *interna* of fatty degeneration spots like those in real aortas, so that one could by no means tell which was the false and which the true aorta by examining the inner surfaces, but only by studying the coats and relations to rising branches, when the real one could be made out certainly."

The frequency with which inflammatory lesions of the outer and middle coat are found in cases of atheroma has, of course, not escaped the observation of English pathologists, but they have been inclined to regard these as consequences of the atheroma. It is rather these inflammatory changes than atheromatous patches which tend to produce aneurism.

"When atheroma is thoroughly established, so that a pulpy mass is formed in the coats at any spot, this is generally thick and hard and unyielding, and does not give way to pressure so as to form an aneurism. The disease that leads to aneurism is the same disease as leads to atheroma, and I think it is a correct way of describing these relations, to say that they are alternative results of this disease of the coats. I mean so that if the subinflammation is severer, then the coats are softened and yield early, before the thickening and stiffening chronic process that leads to the atheroma patch has time to occur. On the other hand, if the subinflammation is lower and slower, then there is not such softening at any time in its course as to lead to aneurismal yielding; but the result is a slow thickening, which reaches a considerable and a sufficient degree before any fatty degeneration occurs within it, and then always the thickening goes further than the granular change, so that the wall of the artery is rather stronger there than weaker."

Dr. Moxon believes, further, that the determining cause of the atheromatous change is mechanical strain. Hence its greater frequency in men than in women; in those whose occupations are laborious, than in those whose habits are sedentary. For the same reason, the arch of the aorta is its most usual seat; and next to the arch of the aorta, the cerebral, cardiac, splenic, and renal arteries are most frequently affected. In all of these vessels there are mechanical impediments to the circulation. Thus the brain, by means of its superior cerebral veins, discharges its blood forwards into the longitudinal sinus in a direction opposed to the current in the sinus, which runs backward; this must make the escape of blood from the brain difficult, and gives rise to a resistance to the flow from the arteries and to a tension within them. The heart is very peculiar in its parietal circulation, since the ventricular contraction throws blood into the coronary arteries, while it hardens and compresses the tissue of the heart, so as to impede at the same moment the passage of blood on through the capillaries, thus producing tension in the artery from the resisted current. The spleen's circulation shows remarkable peculiarities, for great venous spaces are constructed in it, which, in a sense, are obliged to wait the pleasure of the liver, that they may pass on their current. Hence, when the spleen swells under hepatic obstruction, a resistance and tension in the splenic artery will arise. The renal artery will frequently be found to be the seat of atheromatous changes in the form of Bright's disease, known as the contracted kidney, which is accompanied by wasting away of the capillary glomerules in the Malpighian corpuscles, and in which the strain in the renal arteries is consequently very much increased.

The paper is, as our readers will perceive from the abstract which we have made of it, an exceedingly interesting and valuable one. It is accompanied by a plate which exhibits very satisfactorily the inflammatory changes which accompany atheroma.

Art. XVII. *A Short Account of the Delivery of a Two-Headed Monster*, by J. J. PHILLIPS, M.D.; *with a Description of its Anatomy*, by B. N. DALTON. —The dissection in this case showed that each of the two heads was in connection with a spinal column of its own, which extended the whole length of the body of the fœtus, perfect in itself, and having no bony connection with its fellow in any part. The two columns were, in the lowest part of the dorsal region, parallel and close to one another, and gradually diverged both above and below. Connected to the outer side of each column were the ribs, which passed forwards in the usual manner to join the sternum in front. The two innominate bones of the well-developed limbs joined one another in the median line in front; this and the union of the ribs from either side in a common sternum, were the only bony connections between the two halves of the fœtus.

The contents of the thorax consisted of a heart and four lungs, with their accessories. The contents of the abdominal cavity were two stomachs, an alimentary canal, double in some parts, single in others, a liver and spleen, both well formed and somewhat larger than usual in an ordinary fœtus, two kidneys, one quite rudimentary, and two supra-renal bodies. A more minute description follows this general account, to which we must refer such of our readers as are especially interested in the subject of double monsters. Two plates accompany this paper.

So much space has been devoted to the analysis of the purely scientific medical papers, that we feel ourselves compelled to make a very brief abstract of Dr. J. C. STEELE'S *Statistical Account of the Patients treated in Guy's Hospital during 1869*. The total number of persons who participated in the benefits of the charity amounted in the course of the year to 80,838, of whom

5164 were resident in the hospital, while the larger number of 75,674 were treated as out-patients, and were furnished with the necessary medicaments and appliances. The number of patients admitted to the wards was consequently less than in any other year during the last decennium, this being rendered necessary by alterations in the buildings. The mortality during the year was 10.56 per cent. of the cases admitted, and was higher than in preceding years, probably because the number of minor surgical cases was not so great as usual.

Some interesting details in regard to the plan of nursing pursued at Guy's and the other London Hospitals are to be found in this paper, and appended to it are the usual statistical tables of disease.

J. H. H.

ART. XXIV.—*Transactions of the Clinical Society of London*. Vol. III. 8vo. pp. xxxix., 255. London, 1870.

At the opening of the third session of the Clinical Society of London, the President, Mr. JAMES PAGET, made an address upon the importance of the cultivation of clinical science, which, he thinks, "has as good a claim to the name and rights and self-subsistence of a science as any other department of biology; and that in it are the safest and best means of increasing the knowledge of diseases and their treatment." As specially worthy of study, he mentions the natural history of disease, clinical coincidences, and clinical sequences. By clinical coincidences are meant phenomena which are constantly observed together, though there may appear no bond of connection between them: and by clinical sequences, phenomena always found in succession, yet not at first evidently related. The observation of an apparently unmeaning coincidence of dropsy and a curious disease of the kidneys led to the discovery of albuminuria and its wide-spread relations; while the introduction of vaccination was due to the observation of what may be called a clinical sequence. The address, although short, contains many valuable hints as to the true method of conducting clinical research, which, coming as they do from Mr. Paget, are particularly valuable.

We shall first call attention to the medical papers in the volume.

ART. I. *On the Hypophosphites of Iron, Quinia, and Strychnia, in Cases of General Debility and Nervous Exhaustion*. By W. H. DAY, M.D.—The particular cases for which Dr. Day has found the hypophosphites especially applicable, are—

"1. Those of simple and complicated debility, where all the functions are working naturally, but tardily, depression of strength and spirits is a prominent manifestation.

"2. Those of anæmia, with local derangement of one or more sets of nerves, as in neuralgia, or threatening palsy from nervous exhaustion, or slow blood-change from the diatheses of struma, syphilitic tubercle.

"3. Those especially marked by nervous exhaustion and muscular weakness, from whatever cause arising.

"4. Those of excitability and irritability of the nervous system, hysteria, insomnia, some forms of epilepsy, and exhaustion of the brain from overwork, or from any of the usual causes of debility.

"5. Those of atonic dyspepsia, and gastralgia from blood impoverishment, in which chalybeate preparations are indicated, but, through feeble digestive powers, cannot be tolerated."

Art. II. *On the Effects of Copper upon the System.* By EDWARD CLAPTON, M.D.—Having had his attention directed to the effects of the slow introduction of copper into the system, by observing the case of a sailor who had drunk lemon-juice which was kept in a copper tank, Dr. Clapton visited several large copper-foundries for the purpose of ascertaining if the workmen employed in them were affected in a similar way. Although they were found free from any definite disease, the greater number complained of habitual lassitude and giddiness. Greenish stains were found on the teeth, and in some instances on the gums at the insertion of the teeth. The hair of the older workmen was of a slightly greenish colour, and it was observed that the perspiration had produced a similar discoloration of the clothes, and that it continued to produce this effect even after the individual had thoroughly washed himself. It was also observed that contusions were not so likely to give rise to suppuration as in other workmen, and that ulcers occurring among them healed very readily, and that the pus discharged from them was sometimes of a greenish colour. A tendency to diuresis without diabetes was also noticed. In explanation of these remarkable facts, Dr. Clapton says that the system can probably tolerate an excess of what is a natural constituent, however minute in quantity, infinitely better than it can the introduction of what is entirely foreign, as lead, arsenic, or mercury. Among the most remarkable of the statements which Dr. Clapton makes is, that during epidemics of cholera the workers in copper enjoy a most extraordinary immunity.

These observations were deemed of sufficient importance by the society to be referred to a committee, the members of which also visited the copper-foundries, and were enabled by what they saw there to confirm most of Dr. Clapton's statements. They do not, however, appear to have been satisfied that the staining of the shirts was due to chromidrosis, and could not detect any copper in the discharges from ulcers. The hair of one of the workmen was submitted to a chemist for examination, the result of which showed that "the stain on the hair is not due to copper absorbed into the system and then excreted, but is the result of the lodgement of minute particles of copper on the external surface of the hair, much in the same way as a lead comb acts."

Art. V. *Case of Diphtherial Paralysis.* By EDWARD HEADLAM GREENHOW.—In the case reported in this paper, the paralytic symptoms were most marked on the side of the body which corresponded to the seat of the greatest intensity of the local disease, and this correspondence Dr. Greenhow says he has often observed. The order in which the symptoms spread from the local disease was also that which, according to the author, is always seen, the muscles of the fauces being first affected, then those of the tongue, lips, cheek, and finally those of the eyes and limbs. The points of difference between diphtherial paralysis and locomotor ataxy are also pointed out in this paper.

Art. VI. *Case of Ascites treated with Copaiba, Quinia, and Iron.* By HENRY THOMPSON, M.D.

Art. VII. *Cases of Ascites treated with Copaiba.* By ROBERT LIVING, M.D. Communicated by EDWARD HEADLAM GREENHOW, M.D.

We group these two papers together, as they both treat of the value of copaiba in the treatment of abdominal dropsy. In Dr. Henry Thompson's case the usual remedies had been employed without success, but immediate improvement followed the administration daily of \mathfrak{mxx} of copaiba with \mathfrak{mxx} of liq. potassæ. Quinia, iron, and squills were, however, prescribed soon after, and it is only fair to attribute to them some share in the favourable result. In Dr. Living's cases copaiba and the liq. potassæ were the only medicines employed.

Art. VIII. *Case of Hereditary Syphilis, with Paralysis of both Arms, appearing after Vaccination.* By J. J. H. BARTLETT. Communicated by BERKELEY HILL.—The chief points of interest in the above case are, 1st, the appearance of the symptoms after vaccination, and 2d, the paralysis of the upper extremities. The early appearance of the eruption and coryza in this case proved that the syphilis was not inoculated by vaccination. That it was not a case of simple infantile paralysis is shown—1st, by its gradual invasion; 2d, by its rapid recovery under specific treatment. The case is reported chiefly on account of the frequency of hereditary syphilis as a cause of paralysis. The loss of power was attributed in this case to the pressure of a deposit seated high up in the spinal cord, not sufficiently great, however, to affect the nerve-fibres of the lower extremities, which, as Brown-Séquard has shown, are more deeply seated than those of the upper extremities.

Art. X. *A Case of Confluent Acne, caused by Bromide of Potassium.* By WILLIAM CHOLMELEY, M.D.—This seems to have been a case of acne of great severity, affecting not merely the face, but the legs, and following the use of the bromide of potassium in large doses. The following is the description of the appearance of the legs:—

“The skin all around and between the spots of eruption was of a vivid red colour, exquisitely tender, hot, and painful, especially on any movement of the legs. The pain was of a burning and tingling character, and was at times very severe; the elevations formed by the eruption varied much in size, as did those on the face, but were more irregular as to shape, the largest, which were larger than any on the face, being irregularly oblong; the smallest, which were also the most recently formed, were almost a quarter of an inch in diameter, and consisted of a circular, prominent, convex vesicle, filled with a milky-white semi-fluid matter, seated on a slightly elevated and slightly hardened base, and surrounded by a vividly red areola.”

Art. XI. *Cases Illustrative of the Treatment of Syphilis by Hypodermic Injection.* By F. OPPERT, M.D.—Of the eight cases of syphilis in which hypodermic injections of corrosive sublimate were employed, four were cured; and in all the effect produced by them was truly remarkable. In one case abscesses formed at the point of injection, but this was probably owing to the quantity of mercury injected—viz., one-sixth of a grain—being too large. The dose recommended by Dr. Oppert is one-tenth of a grain, although he occasionally uses one-eighth of a grain; in no one of the cases did it require more than two grains to effect the cure, which was generally completed in from three to six weeks. Relapses were not found to be more frequent under this treatment than under the more usual methods of administering mercury, and although it is evident that it cannot be of universal application, it nevertheless forms an addition to the list of therapeutical agents against syphilis, since cases have been cured by it which have resisted other remedies.

Art. XVII. *Case of Angina Pectoris relieved by Nitrite of Amyl.* By F. E. ANSTIE, M.D.

Art. XXI. *Nitrite of Amyl in Angina Pectoris.* By T. LAUDER BRUNTON. Communicated by J. BURDON SANDERSON, M.D.

A notice of both of these papers will be found in the number of this Journal for April, 1870.

Art. XVIII. *A Case of Scarlet Fever, Intercurrent during Nephritis.* By ARTHUR ANDREWS. Communicated by Dr. GEE.—In the case reported in this paper, a healthy young man was, in consequence of exposure to wet, attacked with acute nephritis, which appears to have run a very favourable course, for

on the forty-third day no albumen could be detected in the urine. The next day scarlet fever set in, and at the same time there was observed a marked diminution in the quantity of the urine, which was highly albuminous and almost black from the presence of blood. On the fifth day of the fever the urine had resumed the characters it possessed before the occurrence of the fever. On the ninth day of fever the urine was free from albumen, and remained so until the fourteenth, when the albumen reappeared, and increased day by day in quantity. On the forty-second day from the beginning of the fever the urine was still moderately albuminous. The points of interest in this case are the sudden and abundant hemorrhage from the kidneys coincident with the occurrence of scarlatina. The subsequent disappearance of the albuminuria, and finally its recurrence at the end of the second week. It will be noticed that the albumen reappeared in the urine at the period when it is usually observed for the first time in uncomplicated cases of scarlet fever. Concato had the opportunity of observing the effects of variola upon two cases of chronic nephritis; in both of which albumen suddenly and greatly increased upon the appearance of the eruption, diminished during the stage of suppuration, and then disappeared. It did not reappear so long as the patients were under observation.

Art. XXI. *Case of Aphemia of Nine Months' Duration, in which Speech was Restored by the Education of the Organs of Articulation.* By J. S. BRISTOWE, M.D.—The patient whose case is recorded in this paper was attacked with giddiness and faintness, which rapidly passed into unconsciousness, soon after taking a large dose of quinia, and, during the period of unconsciousness which followed, was said to have had a series of epileptic fits. When he recovered, he was totally unable to move a limb, had entirely lost the faculty of speech, and was stone-deaf. Some improvement in the paralysis of the limbs took place, and the patient recovered his hearing, but at the time of his coming under Dr. Bristowe's observation he had little or no power in the left leg, and no control over it, and could not utter a single articulate sound. Dr. Bristowe found that he was very intelligent, that he understood everything that was said to him and everything that he read, and that he could maintain a conversation of any length, he writing on a slate and his interlocutor speaking. It was also ascertained that he could perform with his lips, tongue, and cheeks all possible forms of voluntary movements, and also that he could produce musical laryngeal sounds. Believing that the inability to speak in this case depended upon the patient having forgotten how to combine automatically the movements of these parts so as to obtain from them the elementary sounds which in combination constitute articulated speech, Dr. Bristowe determined to make the attempt to teach him. This was done by showing him first how to sound a laryngeal note, and, subsequently, by explaining to him how to modify the shape and size of his oral passage and aperture; and getting him at the same time to expire either with or without laryngeal intonation. Dr. Bristowe made him sound successively, both in a whisper and in a loud voice, several of the simple and more common vowel sounds. At the next visit, three or four days after, Dr. Bristowe set to work to teach him the labials, p, b, f, v, and m, and at subsequent visits taught him the lingual and guttural consonantal sounds. Within a month's time from the beginning of his instruction, the patient was able to talk well, except that he spoke somewhat slowly, and evidently had to give more thought to the pronunciation of his words than healthy people need to do. Dr. Bristowe, in the course of this very interesting communication, says:—

“It might be asked how it was that, having forgotten how to speak, yet having the voluntary use of the organs which are employed to speak, he did not

recover language as a child learns language. But to this I think it may be replied that adults don't acquire language intuitively, as children acquire it; they don't begin by uttering odd combinations of sounds as substitutes for words and phrases, they begin with the elements and mount gradually upwards. The child's method of learning language was unnatural to him; besides which, as he could not utter the words which seemed to him on the tip of his tongue, restrained apparently by some mysterious influence, he came to the conclusion that he was mute, and on these grounds, probably, did not persist in making noises with his mouth which his ear would tell him were inarticulate, and in which he would doubtless fail to recognize the glimmerings of speech which they really contained."

Art. XXII. *Cases of Cardiac Disturbance in connection with Nephritis.* By SAMUEL WILKS, M.D.—This paper was noticed in the number of this Journal for July, 1870.

Art. XXVI. *Case of True Keloid of Alibert.* By DYCE DUCKWORTH, M.D.—The patient in this case was a man aged 65 years, who was at the time of his coming under Dr. Duckworth's observation healthy, but had when 22 years old an attack of variola, which does not seem to have given rise to pitting. In 1834, or thirty-six years before the date of the notes of the case, he noticed for the first time a small red pimple, not larger than a pin's head; not painful, but having always from the first a tendency to itch, especially when warm. The growth increased in size, and the following are given as the dimensions when last seen: two and one-half inches across, one and three-fourth inch in its greater vertical diameter, and raised about one-fourth of an inch above the surrounding skin. It occupied the lowest part of the sternal region and overlaid the sternal cartilage, and sent out claw-like processes into the sound skin. Two flattened dusky red patches, one lying over the second left costal cartilage—from which a thickened band extended apparently in the derma to the other smaller patch, situated about an inch outwardly—were developed in consequence of long-continued pressure. The sensibility of the principal mass was increased, and heat was found to augment this sensibility and to deepen the colour. Slight pressure gave rise to stinging sensations in the mass; but these uneasy sensations were entirely removed by firm pressure. There were no cicatrices around or near the tumour, not even visible marks; nor was there any history of a blow or injury to the part. Nor did it appear that a blister had ever been applied to it.

Art. XXVII. *On a Fatal Case of Epileptic Stupor.* By C. HANDFIELD JONES, M.B.—The woman whose case is recorded in this paper was an epileptic, and had had an attack of epileptic mania. She was taken ill on December 21, 1869, lost her speech, and was quite insensible until the 24th, when her mother heard her call out, but immediately afterwards she again became unconscious. On the 31st, when admitted to St. Mary's Hospital, she was found to be able to move both hands and both feet, but to have little power over them. She said, when pressed, that nothing was the matter with her. Pulse 102, weak; temperature 97°.52 F. Urine not albuminous. Extensive patches of gangrene on nates, from the irritation of the urinary and fecal evacuations, which were both passed in bed. About three weeks after her admission erythematous patches appeared on the trunk. At times rigidity of the limbs, and occasionally trembling of the whole frame, were observed.

Death took place on January 25, and the autopsy showed that the right and left ventricles of the brain were filled, but not distended, with serum, which was clear and did not contain any flakes; that there was effusion into the arachnoid, and that there was a deficiency of the gray matters of the convolutions at the

upper and anterior parts of the right hemisphere, where it was reduced to a layer about one-tenth of an inch thick for a length of two or three inches.

Mr. Jones says that the prevalent theory of epilepsy explains the unconsciousness and convulsions by supposing that the arteries are in a state of spasmodic contraction, and that the intellectual centres cannot function for want of blood, while the excitable districts, on account of the commotion excited by suddenly withheld nutrition, give rise to convulsions. But he continues, that although this theory might account for a short paroxysm of epilepsy, it is impossible to believe that a patient with an utterly anæmic encephalon could be capable of sustaining such violent and prolonged exertion as occurs in epileptic mania. Disordered, hurried, imperfect nutrition no doubt exists in the nerve-cells of the epileptic maniac, but this is not dependent merely on a sudden interruption of the nutritive supply, but on some deeper-seated and more remote defects of the nerve-tissue itself. The kidneys are said to have been very large and granular; but there was no evidence that the patient was suffering from uræmic poisoning. It is also certain that the symptoms were not due to the pressure of the liquid either in the ventricles or in the arachnoid cavity, and Mr. Jones therefore attributes them to the remarkable atrophy of the convoluted gray surface—an atrophy which, he is inclined to think, was congenital, from the fact that there was a considerable tendency to nervous disorder in the family of the patient, three female relatives having died insane or epileptic.

The rigidity of the limbs and trunk, and the tremor which were noticed on at least two occasions, must, Mr. Jones thinks, be regarded as evidences that the epileptic tendency was still prevailing. The fugitive erythematous patches, and the bullæ which formed on the limbs, were referred to a paralytic condition of certain vaso-motor nerve-centres—probably those existing in or about the pons Varolii—the sudden appearance and speedy recession of the erythematous patches being very significant of their relation to nerve disorders.

Art. XXVIII. *Apoplexy with Apparent Death from Epileptoid Fits. Restoration on several Occasions by Artificial Respiration.* By ARTHUR LEARED, M.D. Communicated by Dr. HANDFIELD JONES.—In the case reported by Dr. Leared, an attack of apoplexy in an old gentleman of 68 was followed by a series of epileptoid convulsions, seven in number, six of which occurred in five hours, and which were followed by periods of complete apnoea, continuing for two or three minutes, during which time artificial respiration was sedulously practised. In one case it required nearly four minutes before respiration was completely re-established. After the sixth fit, seven grains of bromide of potassium were injected subcutaneously, and this was repeated in four hours. Two days later, bullæ containing dark-coloured fluid, or else dark patches which appeared to have been caused by ruptured bullæ, were discovered at the points where the bromide had been injected, but only on the paralyzed side. The patient died on the sixth day after the apoplectic seizure. No post-mortem examination was permitted; but Dr. Leared had no doubt that cerebral hemorrhage had taken place, and that its seat was on the surface of the hemispheres beneath, or on the arachnoid.

Art. XXX. *A Case of Local Paralysis successfully treated by Injection of Large Doses of Strychnia in Concentrated Solution.* By R. BARWELL.—Report upon a Solution of Strychnia employed by Mr. BARWELL.

Art. XXXI. *Four additional Cases illustrating the Hypodermic Injection of Strychnia in Large Doses.* By R. BARWELL.—A notice of the former of

these papers will be found in the July number, and one of the latter in the October number, of this Journal for 1870.

Art. XXXII. *Cases of Local Paralysis treated by Electricity.* By FRANCIS ED. ANSTIE, M.D.—The first of Dr. Anstie's cases is that of a man who had paralysis of all the extensor muscles and the supinators in the forearm, of the ball of the thumb, of the triceps extensor, and partial paralysis of the deltoid of the right side. The man was a paper-stainer, and his right hand alone came in contact with the pigments. As the most minute examination failed to suggest any possible source for the paralysis other than lead, the very unusual limitation of the disease to one limb must have depended on the fact that the only route of access of the poison was through the skin of the right hand. The diagnosis of lead-poisoning was, moreover, confirmed by the presence of a blue line on the gums.

Faradisation was employed, and the triceps, deltoid, and the thumb muscles responded fairly, but no contraction of the extensors or supinators was produced. At the end of five weeks the former set of muscles were greatly improved in nutrition, and had recovered most of their voluntary power; but the latter remained wasted, perfectly useless, and almost absolutely unirritable to the Faradic current. The constant current was then employed for eight weeks, with the effect of producing a great improvement in the condition of the muscles. Faradisation was now recommenced, and at the end of another month the man was enabled to resume his work.

In commenting on this case, Dr. Anstie says:—

“Where the muscular structure and the nerves remain so far undamaged as to retain their irritability to the Faradic current, there is a great probability that by the use of this remedy alone the affection may be cured. Where, however, the motor nerves of muscles have been so long and so completely paralyzed that they will not respond to the interrupted current, then the cure by this agent is certain to be slow and difficult, and, according to my experience, will often be impossible. If to the extinction of Faradic irritability be added a considerable degree of wasting of the muscles, little or no good will be got even by the most assiduous Faradisation. In these apparently desperate circumstances the constant current often produces wonderfully good results.”

In another of Dr. Anstie's cases, one of paralysis of sensory nerves, Faradisation was of no service, but decided improvement followed the use of the constant current.

Art. XXXIII. *A Case of supposed Lepra Anæsthetica.* By THOMAS BUZZARD, M.D.—This is the report of a case of more than ordinary interest, and the following were the principal symptoms observed:—

“1. Clumsy, stunted fingers, all the nails of which are dwarfed and imperfect. In two of them the last phalanx has disappeared.

“2. A certain amount of general cutaneous anæsthesia, especially of the fingers, and notably of their dorsal aspect. This is so marked that the patient voluntarily informed me that she had frequently burnt her fingers without being aware of it.

“3. Muscular atrophy of the interossei and thenar muscles of the left hand, as well as diminution in size of the muscles of the corresponding forearm. ‘Griffin hand’ strongly marked.

“4. Rigid flexion of the fingers.

“5. A dwarfed state of toe-nails of both feet.

“6. Chronic hoarseness of the voice.

“7. Ptosis of the left eyelid.

“8. Some thickening of at least the right eyebrow.

“9. A white patch on the left forearm.

“10. A history of so-called ‘boils’ which preceded the affection of the fingers, and have left well-marked cicatrices on various parts of the body.”

Dr. Fagge and Mr. Callender were appointed a committee to examine the case, and they report that while they confirm the general accuracy of Dr. Buzard's report, they consider the history and symptoms of the case insufficiently conclusive to allow of their reporting it as a case of modified leprosy.

Art. XXXV. *Case of Atrophy of the Brain; Great Depression of Temperature several Days before Death.* By EDWARD HEADLAM GREENHOW, M.D.—The chief interest in this case attaches to the progressive fall of temperature, which began six days before death, and was for several days the only indication of its near approach.

The following is the record of the temperature:—

Oct. 16th. Temperature in axilla, $97^{\circ}.3$ F.

“ 17th. “ “ “ $95^{\circ}.5$ F.

“ 18th. “ “ “ $92^{\circ}.8$ F.

“ 19th. “ “ right axilla $91^{\circ}.7$ F., in left axilla $90^{\circ}.2$ F.

“ “ P.M. “ “ “ 89° F., “ “ “ $87^{\circ}.3$ F.,

in rectum $89^{\circ}.3$.

Oct. 20. Temp. in right axilla 85° F., in left axilla $84^{\circ}.5$ F., in rectum $85^{\circ}.3$ F.

“ 21st. A.M. “ “ “ $84^{\circ}.7$ F. “ “ “ 84° , in rectum 85° F.

“ 21st. P.M. “ “ “ $85^{\circ}.3$ F. “ “ “ 85° , died at 11.30 P.M.

Dr. Greenhow mentions that these observations were made with a thermometer which was at the same time marking temperatures of 103° to 105° F. in cases of fever.

Art. XXXVI. *A Case of Epileptiform Stupor in a Child successfully treated with Bromide of Potassium.* By W. B. KESTIVEN.—The title of this paper gives the principal points in the case recorded in it, and we shall add nothing to the description of it above given.

Art. XXXVII. *Report of the Committee on Temperature in Syphilis.*—The investigations of the committee on temperature in syphilis were conducted principally with the object of determining, first, whether any rise of temperature took place in syphilitic periostitis, and in affections about joints, sufficiently constant to justify the name of syphilitic fever; secondly, whether this presented variations of temperature sufficiently distinct and regular to afford any tangible character so as to contrast with the curves of acute rheumatism and pyæmia; thirdly, whether any inference could be drawn from the effects of treatment; fourthly, the value of permanent or intercurrent disease in modifying the curves observed.

The conclusions which they think the facts at present available justify, are: First, that syphilitic periostitis is usually accompanied by fever. Secondly, that, *ceteris paribus*, the intensity of the fever will be proportionate to the amount of joint or periosteal affection. Thirdly, that nocturnal exacerbation will then exist, varying from one to four degrees, with a corresponding morning fall; where, however, rheumatoid symptoms are associated with an early outbreak of macular or papular syphilis, although fever exists, the rule of oscillation does not obtain. Fourthly, that the point touched by the morning temperature will be the normal, or slightly above the normal limit, subnormal ranges being seldom reached unless there be marked general amendment. Fifthly, that the fever thus characterized is rebellious to any but a specific treatment. Sixthly, that iodide of potassium, in sufficient doses, generally affects the curve within three days of its administration. The most protracted case noted began to yield on the fifth day. Where the dose of iodide is too small, the curve may be partially affected; a more marked fall ensuing if the dose be increased. Seventhly,

if the iodide be withdrawn prematurely, the temperature curve soon resumes its previous height.

In a case of rheumatic fever, complicated by an outbreak of macular syphilis and mucous tubercles, the daily thermometric variations rarely exceeded a degree, and were quite unaffected by the iodide of potassium. In other forms of constitutional syphilis, the committee found febrile temperature, but in only one was anything approaching to the characteristic oscillation observed.

Art. XLI. *A Case of Paraplegia, Occurring Suddenly and without Previous Warning.* By S. J. GOODFELLOW, M.D. *With a Report of the Minute Examination of the Spinal Cord.* By W. CAYLEY, M.D.—The suddenness of the attack in the case reported by Dr. Goodfellow, its freedom from any loss of power previously, and the completeness and duration of the paralysis of motion, with the partial paralysis of sensation, seemed to indicate that it was one of apoplexy of a limited extent of the spinal cord, involving the whole of the motor tract, but only partially the sensory, and giving rise to meningitis and to inflammation of the cord itself.

The autopsy showed that the diagnosis was incorrect, for no apoplexy of the cord was found, but, instead of this, advanced disease of the portions of the cord corresponding to the third cervical and the third dorsal vertebræ, together with an unusual amount of arachnoid fluid. Upon a microscopic examination being made, several of the small arteries of the cord were observed to be obstructed by fibrinous plugs, which had, of course, produced anæmia of the organ. Dr. Goodfellow is therefore disposed to consider his case as one of syncopal paralysis from thrombosis.

Art. XLII. *Report of Committee appointed to Investigate the Value of Quinia as a Means of Diminishing Bodily Temperature and Pulse in Pyrexia.*—The general conclusions at which this committee arrived are:—

“1. That large doses of quinia have a marked effect in reducing the temperature in pyrexia, and a less marked effect on pulse and respiration.

“2. The reduction of temperature has not been permanent, but has varied in duration from one to forty-eight hours.

“3. The most marked effect has followed when the quinia was given towards the end of the exacerbation or during the remission.

“4. The disagreeable effects of large doses of quinia have been noises in the ears; headache, nausea, and sickness have been rare; delirium quite exceptional; and as regards the collapse noticed in two instances, it is important to remember that this sometimes supervenes in the course of fever independently of quinia, though in one instance at least there is reason to think the collapse had some relation to the repeated large doses of the drug.

“5. Although, with the exception perhaps of certain cases of rheumatic fever in which the temperature is high, no decided evidence has been obtained to show that quinia has any influence in shortening the attack of a specific disease as typhus or scarlet fever, yet, from the marked effect in the temperature and pulse, there is reason to believe that at the critical stage of acute disease, when pulse and temperature are high, a large dose of quinia might be employed with benefit.

“6. In conclusion, your committee are of opinion that while the present inquiry must be regarded as quite a preliminary one, results have been obtained sufficient to warrant a further investigation of the subject.”

Art. XVI. *Three Cases of Tapping the Chest in Pleurisy, with Remarks.* By BERKELEY HILL.

Art. XLIV. *Observations on Paracentesis Thoracis.* By R. DOUGLAS POWELL, M.D.—We shall notice these two papers together, because very similar arguments are used by their writers in favour of the early performance of the

operation of paracentesis thoracis in cases of liquid accumulations within the chest. The earlier the operation is performed, the more likely is it that the lung will be again capable of full expansion. If, on the other hand, the operation is delayed, the adhesions which have formed between the two pleural surfaces, and the changes induced in the lung by the long-continued collapse, will generally prevent the lung from expanding and reoccupying the whole of the pleural cavity. In cases where the effusion is so great that syncope is threatened from embarrassment to the circulation, paracentesis should be at once performed, even if the inflammation of the pleura be still unsubdued, and in all cases it should be performed after the subsidence of acute symptoms, if the ordinary remedies for promoting absorption have been given without effect.

In many cases, it is true, liquid will reaccumulate in the cavity of the pleura; but if it does so, the patient is in no worse a condition than before; on the contrary, reabsorption of the fresh effusion often takes place very rapidly, and an interval or pause to the compression of the lungs has been afforded.

Mr. Hill recommends rather a different treatment in cases where the effusions have become purulent. Having noticed that those cases of pyothorax do best in which the matter is allowed to drain away as fast as it is formed, he recommends the drawing off of the fluid with an ordinary trocar, then passing across the chest a long probe armed with a Chassaignac drawing-tube, cutting down on the end of the probe projecting in the intercostal space behind, seizing the end of the tube, and drawing it out. The tube, he thinks, not only affords a sufficiently free means of exit for the pus, but also prevents the partial closure of the cavity by isolated bands of adhesions, and, by acting as a foreign body in the pleura, hastens the adhesion of the lung to the chest.

Dr. Powell recommends the addition of a mercurial pressure gage to the apparatus for paracentesis, by which the pressure of the fluid within the chest can be readily estimated and syncope prevented. He also suggests the advisability in certain cases of employing the syphon principle in removing the fluid from the pleural cavity, or for injecting other fluids into it, and seems to have rather more faith than Mr. Hill in the efficacy of the injection of iodine in cases of old-standing empyema.

J. H. H.

Turning our attention now to those papers which are particularly interesting to surgeons, we find first—

Art. III. *A Case of Operation for Cleft Palate in a Child aged Sixteen Months.* By F. HOWARD MARSH.—The operation was performed with the aid of chloroform, and of the gag devised by Mr. T. Smith—a preliminary myotomy, by Pollock's and Sédillot's method, having been practised some days previously. Horseshair sutures were used, and the result of the operation was quite satisfactory. Two other cases, operated on by Mr. Lawson Tait and Mr. F. Buzzard, are referred to, in which the respective ages of the patients were nine and six months.

Art. IV. *Fracture of the Base of the Skull, with Slight Immediate Symptoms, Subsequent Coma and Hemiplegia, Recovery from these, Death and Autopsy.* By CAMPBELL DE MORGAN.—This case is one of very great interest; it illustrates the now pretty generally acknowledged fact, that fracture of the base of the skull always involves the vault of the skull also, and that death from cerebral abscess is commonly owing to rupture into a lateral ventricle. Some points in the clinical history are, however, unexplained, and, on the other hand, some lesions observed at the autopsy are not accounted for; we cannot help suspecting that the two should be put together. Thus, there is a record of

suddenly occurring coma, with *left* hemiplegia, and slight rigidity of the *right* side, but without any facial paralysis, though with slight impairment of the power of speech. These alarming symptoms disappeared almost as quickly as they came, therein resembling the symptoms of cerebral compression, which depend upon superficial hemorrhage, rather than such as would be caused by a steadily growing abscess. Now, in the post-mortem record we find that "beneath the left anterior lobe of the cerebrum, much thick, red, and yellow putty-like matter was smeared over the membranes—clearly altered blood:" if this shrinking clot was, as stated, on the left side, it could not, of course, have been the cause of the left hemiplegia, though it might have given rise to the coincident mental oppression. May there not, however, have been some coexisting *spinal* hemorrhage on the left side, to account for the left-sided paralysis, and right-sided rigidity? This question is not answered by the history of the autopsy.

Art. IX. *A Case in which Colotomy was performed for the Relief of Cancer of the Rectum.* By G. W. CALLENDER.—The patient was a man aged 34, who for some time had suffered intensely from scirrhus of the rectum, total obstruction having occurred three days before the operation. The relief afforded by surgical interference was immediate, and the patient's convalescence (up to the date at which the report closes) steady, though of course the scirrhus condition of the rectum remained. Mr. Callender mentions that he has notes of twelve cases of colotomy for cancer, only three of which proved fatal, and that none of the deaths were in any degree attributable to the operation. In his recommendation of colotomy as a legitimate and highly conservative procedure, we cordially coincide.

Art. XII. *Attacks of Pain in the Orbit, Caused by a Concretion, and Cured by its Excision.* By J. CROFT.—The patient, a man aged 48, had been struck above the eye, about 33 years previously, with a cricket-bat, and had ever since been subject to attacks of violent pain, which were evidently connected with a small hard body, situated in the upper part of the orbit. This body was excised by Mr. Croft (with the effect of completely curing the patient), and appeared to be the remains of an old clot which had undergone calcification.

Art. XIII. *Cases in which Torsion has been employed, and Remarks on the Comparative Merits of that Process and Acupressure.* By J. COOPER FORSTER.—This may be considered as a sequel to Mr. Forster's paper in the 14th volume of the Guy's Hospital Reports, which was noticed in the number of this Journal for July, 1869, p. 192. Eight cases of amputation are referred to, one of which was still under observation when the report closed; of the other seven, three died, the four recoveries being in young persons (the age of the oldest was 21 years), and the operations having been performed for chronic joint disease, so that the favourable issue is not very surprising. Secondary hemorrhage was not observed in any case, and "it is," we are told, "the remark of the dressers and house surgeons of Guy's Hospital now, that they have been less frequently called to cases of bleeding after operations since torsion has been practised, than before." We hope we may be pardoned for saying that we hardly look upon the "remark" of these gentlemen as satisfactory statistical evidence of the great superiority of torsion over other means of arresting arterial hemorrhage. A coloured plate is given to show the *mechanism* of torsion, and illustrates sufficiently well the twisting of the outer, and the reduplication of the inner, coats of an artery which has been thus treated.

Art. XIV. *Medullary Cancer of the Left Half of the Soft Palate.* By JOHN LANGTON.—The tumour was removed with the aid of Mr. Smith's gag, and the

operation afforded decided though very temporary relief, the morbid growth recurring *in situ* in about a month, and the patient dying from exhaustion shortly afterwards. Secondary deposits were found, after death, in the cervical and mediastinal glands, and in both lungs.

Art. XV. *Cases of Carbuncular Inflammation of the Face.* By T. SMITH.—Three cases are narrated, all terminating fatally. In only one was a post-mortem examination made, and in that recent pleuritic inflammation was found on both sides, with injection of the lungs, and “several spots of pulmonary apoplexy, but no abscesses”—or, in other words, we suppose, pyæmic patches, not advanced beyond their first stage. In this case, by the way, the carbuncle was not situated on the face, but between the shoulders. Mr. Smith adds some interesting remarks as to the pathology of facial carbuncle, which, in common with the majority of British surgical writers, he regards as identical in nature with the common carbuncle, and as totally distinct from the malignant pustule, or, as the French rather confusingly call it, *charbon*. The special gravity of facial carbuncle, Mr. Smith is disposed to attribute “to the exceptionally free and direct communication of the venous system of the face with other large venous trunks,” and to “textural peculiarities of the soft parts involved,” which predispose to the occurrence of erysipelas and inflammatory œdema. A somewhat similar doctrine, we may add, has been recently advanced by M. Reverdin (of *transplantation of cuticle* fame), in the numbers of the *Archives Générales de Médecine* for June, July, and August, 1870. The treatment recommended by Mr. Smith is the administration of large doses of quinia (which we highly approve), with the addition of the sulphite of soda or magnesia—which we are quite willing to believe would do no particular harm.

Art. XIX. *Case of Cancer following Ichthyosis of the Tongue.* By JAMES PAGET.—This short paper is designed as a supplement to Mr. Hulke's, which appeared in the last volume of the *Transactions*, and which was noticed in the number of this Journal for April, 1870, p. 483. Mr. Paget's patient was a woman forty-two years old, in whom epithelioma was developed in the tongue within sixteen months of the first appearance of ichthyosis; the disease ran a rapid course, ulceration occurring, and a submaxillary lymphatic gland becoming involved, only a month later.

Art. XX. *On Expansion of the Antrum of Highmore.* By CHARLES H. MOORE.—In this paper, the late Mr. Moore (whose death is still mourned by all friends of surgical science) gives an account of a most remarkable, and, so far as we know, an unparalleled case. The patient was in advanced life, and had had for more than two years a slowly growing swelling in the right antrum, which ultimately burst into the month, discharging “a thick pultaceous substance of a brown colour, and of fœtor indescribable.” A free opening having been made, the antrum was found to be filled with a similar substance, and careful examination showed a wasting of the gum, and a minute aperture alongside of the molar tooth (itself sound), through which a fine probe could be passed into the antrum and fairly up to the floor of the orbit.

“The origin of the fetid collection in the bone thus appeared to be cleared up. Pressure in mastication had gradually driven food up the socket between the first molar and the wasting gum. The apex of the socket happening to be defective, the food found its way into the antrum and detached the endosteum. Slowly accumulating, but by a kind of hydraulic power, it also expanded and perforated the bone, and led to the other mischiefs which have been detailed.”

The treatment consisted in maintaining a free outlet from the antrum by the introduction of a vulcanite tube, and in insuring cleanliness by syringing; under

this plan, the walls of the cavity gradually collapsed, and the natural appearance of the face was restored.

Art. XXIII. *On a Case of Inguinal Hydrocele.* By C. HOLTHOUSE.—Inguinal hydrocele is, as its name implies, hydrocele of the vaginal process of the peritoneum, in connection with an undescended or partially descended testis. In the case now recorded, the patient was supposed to be suffering from strangulated hernia; but "as soon as I touched the tumour," says Mr. Holthouse, "I discovered that it was not a hernia, but a hydrocele." We may add that if the physical characters of the tumour were half as plainly marked as would appear from Mr. Holthouse's description, a very moderate amount of the *tactus eruditus* would have sufficed, we should suppose, to make a correct diagnosis.

Art. XXIV. *Note of Cases of Amputation in which Ligatures have been Used.* By GEORGE W. CALLENDER.—This paper should be read in connection with Mr. Forster's, on Torsion (Art. XIII.).

"The attention of the profession," says Mr. Callender, "has been directed from time to time to the favourable results which follow the use of acupressure or of torsion; and it has been argued (1) that the risk of secondary hemorrhage is less than when ligatures are employed; and (2) that patients recover better (more surely and more quickly) than when ligature threads are left in the wounds."

With regard to the first point, Mr. Callender shows that in 480 amputations (with ligatures) at St. Bartholomew's Hospital, there were but six deaths from secondary hemorrhage, or a fraction over one per cent.; and with regard to the second point, that in 46 amputations performed during 1869, and embracing no less than 41 of the lower extremity, there were only seven deaths, ligatures having been used in all but one case. Hence he very rightly considers himself "justified in stating that secondary bleeding is a comparatively rare occurrence after tying main arteries," and in expressing the opinion that, while the results of the ligature compare favourably with those of either acupressure or torsion, "some discredit has unfairly fallen upon the ligature from the way in which, perhaps from over-familiarity, it is sometimes applied; for instance, when it is so tightly tied as all but to cut through the vessel. Tying an artery," he adds, "requires just as much care as, but no more than, twisting or acupressing it."

Art. XXV. *Cases of Imperforate Rectum, treated by Operation.* By CHRISTOPHER HEATH.—Four cases are narrated, each of much interest, and in two of which very satisfactory results were obtained. In one of the successful cases, although the mucous membrane of the gut could not be brought down and stitched to the skin—*secundum artem*—yet nature "established a very satisfactory continuity of mucous membrane over the cut surface," and very little difficulty was experienced in maintaining the passage. In every instance, we may add, the gut was opened from the perineum.

Art. XXIX. *On a Case of Inguino-crural Hernia.* By C. HOLTHOUSE.—This variety of hernia (the name of which appears to have been originally suggested by Mr. Holthouse) differs from the ordinary *hernia into the vaginal process* ("congenital" hernia), in that, the testicle being undescended, the protruded gut, instead of passing downwards into the scrotum, curls outwards along the fold of the groin. Instances of this rare form of hernia have been recorded by Burns, Key, Scarpa, Fano, and Humphrey, and Hulke has published an account of a hernia of slow formation, which (the testis remaining in the abdomen) came to occupy a similar position.

Art. XXXIV. *Spontaneous Necrosis and Separation of a Portion of the Skull and Scalp.* By THOMAS SMITH.—The patient, a child of nine years,

“in the summer of 1868 fell into the water, and wore her wet bonnet while exposed to a hot sun for the rest of the day. This was followed by an attack of erysipelas, terminating in abscess, which spontaneously discharged itself.

“In March, 1869, a large piece of bone came away from her skull, bringing with it a corresponding portion of the hairy scalp.

“The child had five convulsion fits soon after the swelling on her head first appeared, but she has never suffered from any form or degree of paralysis.”

The remarkable point in this case is, of course, the simultaneous separation of the necrosed bone and of a corresponding portion of the scalp, which extended “almost up to the margin of the bone,” and was abruptly limited. The hair was thick and healthy, and had been cut short.

Art. XXXVIII. *Two Cases of Obstruction of the Œsophagus, treated by Mechanical Means.* By MORRELL MACKENZIE, M.D.—The first case was one of fibrous stricture which originated without any apparent cause, and which was much benefited by gradual dilatation with bougies. In the second case, the stricture was caused by the patient having accidentally swallowed a mouthful of soap-lees; dilatation was at first effected by the use of bougies, for which Dr. Mackenzie afterwards substituted his “œsophageal dilator,” which acts on precisely the same principle as Mr. Holt’s well-known instrument for splitting strictures of the urethra.

Art. XXXIX. *A Case of Necrosis of the Femur, without External Inflammation.* By JAMES PAGET.—The patient was a girl of nineteen, who suffered from pain in the left knee, and presented on the corresponding thigh a hard, oval swelling, indolent, but slightly tender on deep pressure. As the administration of iodide of potassium for three months failed to procure relief, Mr. Paget made an incision six inches long on the outer part of the thigh, dividing the periosteum, which was much thickened, and exposing “a flattened irregular cavity, from which a little blood-coloured fluid escaped, and was followed by the protrusion of some soft substance like coarse granulations. In this cavity, which was from an inch to an inch and a half in its diameter, was a thin, rough sequestrum, separated from the wall of the femur, about an inch and a quarter long and a quarter of an inch wide.” The cavity in which the sequestrum lay was smooth and velvety to the touch, and the sequestrum appeared to have come “not from the outermost layers of the femur, but from layers just within them.” Mr. Paget terminates his remarks with some judicious reflections upon the not uncommon mistake of supposing pain in the knee to be necessarily indicative of hip disease. In the case just recorded, the pain in the knee was evidently dependent upon the necrosis of the femur, and another case is referred to, in which pain in the knee was the earliest symptom of a cancerous tumour of the upper part of the same bone. We may add that we have known pain in the knee to occur in a case of spinal caries, from an abscess making its way through the sacro-sciatic foramen, instead of appearing at the more usual place, and thus, in its course down the outside of the thigh, producing irritation of branches of the obturator nerve.

Art. XLIII. *Wasting of Part of the Tongue, in Connection with Necrosis of the Occipital Bone.* By JAMES PAGET.—This is a very interesting case; extensive necrosis of the occipital bone resulted from a fall on the head six years previously, and caused—probably by inducing some morbid condition of the hypoglossal nerve, or of some of its filaments—decided atrophy of the muscles of the right side of the tongue. Mr. Paget removed several sequestra, one of

which included the posterior third of the border of the foramen magnum, and within a few days the wasted part of the tongue began to grow larger, and within a month had nearly regained its former size and muscular power.

This, and a case of unilateral atrophy of the tongue, recently recorded by Mr. W. Fairlie Clarke, in the *British Medical Journal* for July 8, 1871, are the only instances of the kind with which we are acquainted.

We must, in conclusion, congratulate the members of the Clinical Society on the excellent result of their year's work; we know of no serial volume of the same size which contains so many interesting and valuable communications.

J. A., JR.

ART. XXV.—*St. George's Hospital Reports*. Edited by JOHN W. OGLE, M.D., F.R.C.P., and TIMOTHY HOLMES, F.R.C.S. Vol. V., 1870. 8vo. pp. 382. London: J. & A. Churchill, 1871.

THE fifth volume of this series, the early numbers of which gave promise of much value, is before us, and upon examination of it we regret to find that the resources of St. George's Hospital do not appear to have been extensively utilized for the enrichment of the Reports, as the present volume has but a minority of the staff for its contributors. In accordance with our custom, we will analyze the twenty-one articles of which it is composed.

ART. I. *Jottings from Practice*, by H. W. FULLER, M.D.—Dr. Fuller writes on cases of functional disturbance of the heart's action accompanied by intense murmur, which in the closest manner simulates serious organic valvular mischief. The true character of these cases, he thinks, is often overlooked, but with care their diagnosis can be made with tolerable certainty. The location of the murmur is not to be relied upon, and more certain evidence is to be obtained from the position of the heart and the history of the case. The chief diagnostic elements of the disorder are the forcible and turbulent action of the heart with the apex beat in its normal position, little or no febrile disturbance, and the absence of any history of former cardiac disease.

There is another point on which Dr. Fuller lays stress, namely, the pathological significance of *organic* murmurs, and of this it is impossible to judge from a single examination. The importance of any murmur is strictly proportioned to the amount of obstruction which the mischief in which it originates offers to the onward current of the blood, and of this no single examination will enable us to judge. A minute bead of fibrin may be so located on a valve as to give rise to a sharp eddy, productive of a loud, rough, and persistent murmur, and yet not offer any serious impediment to the onward flow of blood; whereas in another instance the valves may be damaged in such a way as to cause very little murmur, and yet seriously obstruct the onward flow of blood, and thus may lead rapidly to hypertrophy and dilatation. Therefore, we should be careful not to be over-hasty in forming our prognosis in these cases. Several examinations, conducted at considerable intervals, will often be needed to determine with certainty whether a murmur is organic or functional; and even when this point is decided, the practical importance of the lesion, the degree to which it interferes with the circulation, and the rapidity, therefore, with which it will induce hypertrophy and dilatation, and lead to dropsy, dyspnoea, and death, are only to be ascertained by carefully noting the condition of the

heart as regards its sounds, its impulse, and the position of apex beat, at several examinations, conducted at intervals of three or four months.

Dr. Fuller also calls attention to the degree to which these organic lesions will sometimes admit of repair when the patient is placed under favourable circumstances, and this reparative action, he thinks, takes place to a far greater degree than is generally supposed, and in proof of it cites the following remarkable case:—

"In the year 1865 I was consulted about a young man, æt. 17, who had suffered from rheumatic fever at the age of 15, and again a twelvemonth afterwards; on which last occasion he was reported to have had inflammation of the heart. When first brought to me, he was suffering severely from palpitation, with a heaving impulse of the heart visible through his clothes, and an extremely loud and rough systolic mitral murmur. His father was aware of his son's condition, for his medical attendant had told him that the heart was irretrievably damaged, and that dropsy was the inevitable result. I so far confirmed this gentleman's opinion as to tell the father that the mitral valve was damaged, and that, unless the mischief were to subside under treatment, the case would probably terminate fatally at no distant date. But having said thus much, I told him that, as the apex of the heart was beating almost in its natural position, there were fair grounds for hoping that the mischief was not so serious as the physical signs appeared to indicate, and that treatment might be productive of real benefit, and I instanced several cases of partial or complete repair which I had met with in practice. Further, I entreated the father not to regard the case as hopeless, but to do all that was necessary to give his son a chance of recovery. I explained that complete rest, with freedom from excitement, for two or three years, was absolutely essential, as was also a long-continued course of iron, together with cardiac sedatives, and that throughout the period of treatment the utmost care would be needed to regulate the secretions, and avoid a recurrence of rheumatism. My injunctions were faithfully carried out by both father and son, and my patient was brought to me every three months, that I might note the progress of events. Before the end of a twelvemonth considerable improvement had taken place, and when he came to me last March for a certificate of health, with a view to a public appointment, the heart's action was so quiet and regular, the apex beat so nearly in its normal position, and the murmur so faintly audible, that I verily believe the disease would have escaped detection except under the closest examination."

In some remarks on *paracentesis thoracis*, Dr. Fuller claims that entrance of air into the pleural cavity is not attended by any injury to the patient, that it is impossible to prevent it, and that instruments devised for the purpose are not only injurious, but also useless, or worse than useless, as it is physically impossible in the majority of cases to empty the chest by their agency, for the lungs in many instances are permanently or temporarily incapable of expanding, and expansion can only be brought about by the natural inspiratory efforts after a period of many months. In these cases it is as impossible to empty the chest as it is to empty a cask by tapping it without admitting air.

Dr. Fuller summarizes his advice as follows:—

"1. Tap whenever dyspnoea is very urgent, or as soon as it becomes evident that remedies fail to produce absorption of the fluid in the chest. 2. Tap as low down as possible, and make a free opening [either by a full-sized trocar or a scalpel], allowing the chest to empty itself thoroughly. 3. So far as possible, avoid causing any local irritation. 4. If the fluid withdrawn is serous or sero-sanguineous, close the opening with carbolic plaster as soon as the operation is concluded; if, on the contrary, the fluid is purulent, adopt some means to prevent the wound from closing, and take care that the matter is allowed to drain off as fast as it is formed. 5. After the operation support the patient by bark and good nourishment, and for a day or two give him opium if necessary."

Out of the large number of cases (under Dr. Fuller's care at St. George's Hospital) in which tapping has been performed, only one has proved fatal.

Dr. Fuller in these jottings also comments on *Osteo-Arthritis, or so-called Rheumatic Gout; its Analogies, Natural Affinities, and Antagonisms*. The similarity of the general symptoms of osteo-arthritis, or as it is often called, rheumatoid arthritis, to those of well-known constitutional disorders, is too obvious to require specific mention, and the close analogy of its local symptoms to those of scrofulous joint disease has been pointed out by Collis, of Dublin, and the late Dr. Todd, but its natural affinities, and its strange yet well-marked antagonisms, appear almost to have escaped recognition. Dr. Fuller has discovered its affinity and its antagonism to phthisis pulmonalis. Out of 476 patients whose history he has carefully investigated, no less than 196 (40.3 per cent.) belonged to decidedly consumptive families, and in his entire experience he has only known five persons to die of consumption whose joints have been distorted by rheumatoid arthritis, and in all these five the active symptoms of the articular disease had long subsided before the phthisis began.

The antagonism of rheumatoid arthritis to albuminuria, Dr. Fuller finds, is even more striking. In examining the urine in many hundreds of these cases, he has never detected the presence of albumen. This is the more remarkable since albuminuria occurs to a greater or less extent in acute or chronic disease, and may be regarded as the natural accompaniment of old cases of chronic gout. Indeed, the contrast afforded by the urine, in cases of rheumatoid arthritis and of chronic gout, may often serve as a means of diagnosis between the two diseases.

The concluding jotting, entitled *The Secretions as Guides to Treatment*, is very instructive, and we wish all our readers could peruse it. Dr. Fuller lays stress upon the point that in disease we should always examine the secretions, and prescribe according to their monitions, and attributes the failure of remedies oftentimes to produce their well-known effects, to a neglect of this rule. In illustration of this he cites several striking examples.

Art. II. *The Effects of Overwork and Strain on the Heart and Great Blood-vessels*, by T. CLIFFORD ALLBUTT, M.D.—The effect of overwork and strain has, for the most part, been overlooked in the consideration of the causation of heart disease, and it is only recently that its importance in this respect has been prominently set forth. Dr. Allbutt finds that English authors have overlooked this cause, and with foreign writers, likewise, "the mechanical causation of heart disease is either omitted, or is treated in a way so meagre as to be worthless." He refers to the pamphlet recently published by Mr. Myers, on *Diseases of Heart among Soldiers*, who, however, was anticipated by the observations made during the recent war in this country, especially those of Dr. Da Costa, of which Dr. Allbutt seems entirely ignorant.

Dr. Da Costa, in 1867, directed attention to cases of valvular disease, originating after heavy marching and violent exertion, which were probably the consequences of preceding enlargement (*United States Sanitary Commission Memoirs, Medical*: New York, 1867. Chap. X). The most frequent cause of this hypertrophy he found to be persistent functional disorder, especially that disorder which he has described¹ as "irritable heart." Dr. Allbutt seems to have observed the same causation at work in a heavily labouring district in which he resides.

Art. III. *On Scarlet Fever*, by E. COPEMAN, M.D.—In this paper the author contends that scarlet fever is propagated and intensified by the exposure of the

¹ See American Journal of the Medical Sciences, January, 1871.

excreta of those who are affected by it, and that a speedy removal and disinfecting of these excreta will prove the best means of limiting the disease, and rendering it milder in its character. Dr. C. believes good air, good water, and good diet to be the tripod of success in the treatment of this disease, and that these "three agents afforded us are far more powerful than any we can supply."

Art. IV. *Cases of Accidental Poisoning*, by C. PAGET BLAKE, M.D.—The first case is that of a lady who swallowed, by mistake, about three grains of veratria, in a liniment prescribed for severe tic douloureux from which she was suffering. Recovery resulted under the administration of sulphate of zinc emetic and tannic acid, given with a view of forming an insoluble precipitate with any unassimilated veratria that might be present.

The second and third cases were of poisoning by caustic ammonia.

Art. V. *The Modern Treatment of Syphilis; based on the Evidence adduced before the Committee appointed to inquire into the Pathology and Treatment of the Venereal Disease*, published in 1867, by EDGECOMBE VENNING, Esq.—The object of this paper is to present a concise statement of the conclusions, as regards the pathology and treatment of syphilis, to be deduced from the evidence elicited by the committee appointed by the British Lords Commissioners of the Admiralty, in the year 1864. Their report is marked by the great diversity of opinions expressed by most of the leading members of the profession on both the pathology and treatment of syphilis.

Art. VI. *On Scrofula*, by J. WARRINGTON HAWARD, Esq.—The author here sets forth his belief that the great majority of chronic bone and joint diseases are in no way connected with scrofula, which he defines as "a disease of children, which manifests itself by a peculiar vulnerability and proneness of the subject to chronic inflammations of the mucous membranes and skin, lymphatic system, and bones; which inflammations are characterized by great pertinacity, and the products of which have a retrograde tendency." The author denies the identity of scrofula and tubercle, and considers the associated symptoms of scrofula as manifestations of the same morbid process, differing only with the difference of the tissues in which they occur. Thus, the same irritation which produces the catarrhal symptoms when affecting the mucous membrane of the eyes and nose, produces, when it attacks the bowels, a similar catarrh or diarrhoea; or, in the lungs, a bronchitis or pneumonia. All these consist of a hyperplasia of the cellular elements of the affected tissue, which elements, being multiplied on a free surface, are cast off by an accompanying catarrhal flux. The same thing occurring on the skin causes an eczema, which might be described as a catarrh of the skin. If, however, this increase of cell-elements occurs in a lymphatic gland, the result is different, simply because they cannot escape, but collect in its interior; it then gives rise to the swelling characterizing inflammation of these organs.

The treatment of scrofula, according to Mr. Haward, should be both general and local. The general should consist in favourable hygienic conditions, the use of cod-liver oil and iron; the local will vary with the position and manner in which the disease manifests itself. For the skin affections a stimulant treatment is generally best, locally; in the pustular eruptions quinia should be given with the cod-liver oil; and for the porrigo, an ointment of fifteen grains of the red oxide of mercury, with half an ounce of olive oil, and the same quantity of lard. For the serpiginous ulceration, the iodide of lead ointment is an excellent application. The enlarged glands should be left alone, as poulticing and painting with iodine, in Mr. Haward's opinion, do harm. If they suppurate, and the skin is evidently becoming thinned, a very small puncture may be made,

the matter gently squeezed out, and slight pressure made by a pad of lint fixed on each side of the opening with strips of plaster. For the local treatment of the caries of scrofula Mr. Haward has found the application of sulphuric acid exceedingly useful in promoting the rapid separation of the diseased bone without the gouging and scraping which so often set up fresh mischief.

Art. VII. *On Recurrent Insanity*, by G. FIELDING BLANDFORD, M.D.—The author here discusses how far the subject of recurrent insanity is to be considered, for the ordinary purposes of life, of sane and responsible mind, of sound mind, memory, and understanding, and able to take care of himself and his affairs.

Art. VIII. *On Distrain of the Heart*, by REGINALD THOMPSON, M.D.—This paper is founded on three cases of sudden dilatation of the heart from accidental causes, and to this form of injury Dr. Thompson gives the name of "distrain." As regards the treatment of these cases, perfect rest is the most important remedial agent; and those narcotics which quiet the action of the heart and tend to reduce the number of pulsations—namely, conium, henbane, and belladonna—are more useful than digitalis, which seemed to Dr. Thompson to be of little service.

Art. IX. *Labio-glosso-laryngeal Paralysis*, by W. B. CHEADLE, M.D.—This article contains the history of two cases of the disease occurring in women, one æt. 55, ending in death, the other, æt. 42, ending in recovery. In the latter case syphilis was suspected to be at the root of the evil, and recovery (rendering the case particularly interesting) ensued under the long-continued use of iodide of potassium.

Art. X. *On the Etiology of Pneumonia*, by OCTAVIUS STURGES, M.D.—This paper is a discussion on the influence of the weather in the cause of pneumonia. The results arrived at are not conclusive.

Art. XI. *On Ankylosis*, by B. E. BRODHURST.—This instructive paper on the treatment of ankylosis concludes with the narration of the following very remarkable case of ankylosis of the entire skeleton:—

"At twenty-five years of age the patient contracted a gonorrhœal discharge, which was followed by synovial inflammation, with effusion into both knee-joints. He was confined to the house during a fortnight or three weeks, and was then again able to walk about. At this time, however, the swelling and stiffness of the knees had not quite subsided. The urethral discharge continued for two months, and then it ceased. Before three months had elapsed, the use of the knees was perfectly restored. At this period, he again contracted a gonorrhœal discharge, and it was followed, in the course of some few days, by inflammation of the left hip-joint, of both ankle-joints, and of the tarsal joints. The swelling and stiffness lasted longer on this than on the previous occasion, and indeed ten months passed before he was able to walk with sticks. Stiffness continued after this time yet for many months, but at length he regained the use of the affected joints.

"In November, 1852, a similar series of events occurred as before. On this occasion, however, both hip-joints became inflamed, as well as both ankle-joints and one knee-joint. The effusion and pain were greater on this than on any previous occasion, and he was longer in recovering. Indeed, he never entirely lost the stiffness about the hips, and had always difficulty in rising from a chair.

"In 1854 he married. Articular inflammation returned with redoubled violence, without any urethral discharge being present, and attacked in succession every articulation in the body.

"I found him with ankylosis of all the cervical vertebræ, and of most of the dorsal vertebræ, as well as of both hips. Subsequently, ankylosis took place of the temporo-maxillary articulations, the shoulder-joints, and the knees. And

before death the entire skeleton was ankylosed: he could not even move his head."

Art. XII. *Observation on Scarlet Fever, especially with reference to its Epidemic Character*, by A. W. BARCLAY, M.D.—Dr. B. maintains that scarlet fever is propagated by a miasm, under certain circumstances, with which we are unacquainted. The miasm is capable of acquiring unusually infectious properties; and when in this condition it is introduced into a district, the disease assumes an epidemic character, which it does not possess under ordinary circumstances; the actual results of this unknown factor being more or less influenced by other agencies. Among these must be placed atmospheric causes, conditions of population bringing its individual members into contact with the infectious miasm, and those sanitary defects which lower the general health, especially if combined with poverty and starvation.

With reference to the means at our disposal for arresting the spread of the disease and aiding the recovery of the affected, experience teaches us that the scarlatinal miasm is to a certain extent unstable, and may be rendered innocuous by chemical decomposition. And the agents that may be employed for this purpose are deodorizers, as Burnett's solution and perchloride of iron, antiseptics, as carbolic acid, and disinfectants, as the burning of sulphur.

Art. XIII. *On the Relative Influence of Bread, Honey, and Sugar upon the Amount of Urea and Sugar excreted in Diabetes*, by W. WADHAM, M.D.—From experiments upon a case of diabetes under Dr. Wadham's care, the following interesting facts were elicited:—

"1. That, irrespective of any change of diet, the amount of urine, urea, and sugar excreted in diabetes varies very greatly from day to day.

"2. That the excess in either of these constituents does not appear to be accompanied by a decrease in the others.

"3. That the addition of honey to the diet causes an immediate rise in the quantity of urine, urea, and sugar excreted, the rise in all these becoming greater as the honey is continued.

"4. That only about half of the sugar given in this form appears to be eliminated by the kidneys in the form of sugar, the remainder being probably burnt off in the lungs or assimilated to the system.

"5. That whatever truth there may be in the asserted benefit derived from the dietetic use of honey in diabetes, in this case it certainly did not act beneficially by diminishing the amount of urea; for not only was the amount of urine, urea, and sugar greatly increased during its consumption, but after it was omitted all these remained higher than they had previously been, the increase being especially noticeable in the amount of urea."

Further experiments made upon other diabetics seemed to prove that the amount of sugar excreted in the urine is far larger after the consumption of a given weight of bread than it would be after the same amount of honey, and after this latter than after pure white sugar. The addition of bread to the diet seemed also invariably to increase the amount of urea excreted.

The practical conclusions deduced from these experiments are:—

"1. That in all cases and in every stage of diabetes, bread, and probably all other amylaceous food, should be strictly excluded from the diet; for, if given, it will largely increase the amount of urine, urea, and sugar excreted, and in every way aggravate the symptoms of the disease. It is, however, probable that its injurious effect is less felt by an individual who is at the same time taking exercise and much in the open air.

"2. That honey may often be advantageously used as an article of diet, because in some cases, or possibly in some stages, of diabetes a large amount of it may be eaten without materially increasing the weight of urea or sugar excreted; and because, although in other cases an increase of the sugar may occur, this

is accompanied by a diminished excretion of urea, and is often very much less in amount than would be represented by the sugar consumed in the form of honey.

"3. That pure white sugar may be added to the diet in diabetes with every prospect of a beneficial result; for its use is accompanied by a diminution in the amount of urea excreted, and when given in large quantities, less than one-sixth of the amount escapes as sugar in the urine, the remainder being either burnt off or otherwise appropriated to the uses of the system."

Art. XIV. *On the Recent Outbreak of Smallpox at St. George's Hospital*, by THOMAS JONES, M.D.—In November and December of 1870, and January and February of 1871, there were twenty cases attacked with smallpox in the hospital; four having received the infection in the house were discharged, and afterwards attacked with the disease; and three were admitted before the appearance of the eruption—the febrile symptoms being attributed to other causes. Of these twenty-seven cases, six died, and three of these were suffering at the time of death from serious organic lesions—of the fatal cases, three were never vaccinated. Of the three that *were* vaccinated, one had the disease in a very mild form, and her death was attributed to extensive mitral disease with dropsy; the other two had the disease in the confluent form—one of whom was at the time suffering from pyelitis; and the other was a delicate female with three indifferent vaccine cicatrices.

There were 21 cases that had been vaccinated. Of these, 14 had vaccine marks of very indifferent quality, and 7 had very good marks. Of those with indifferent marks, 5 had the disease in a very modified form, 2 unmodified, and 7 moderately modified. Of the 7 with good marks, the disease was very slight in all but one, and in this case the attack was certainly modified. One of the vaccinated cases was revaccinated six years ago, but was unsuccessful; and one had smallpox twenty years ago. Two of the cases are *said* to have been vaccinated—one of them had the disease in an unmodified form, and recovered; the other died of confluent smallpox. Three were unvaccinated, and all died.

The disease was introduced into the hospital by one of the patients who was allowed to pass out to visit a friend, who, it appears, was at the time suffering from smallpox, and this was the first case. It is believed that the disease was propagated to the others through the medium of the laundry; the sheets on which the first case slept being washed, without being disinfected, with the rest of the house linen.

This outbreak teaches the following very important lessons:—

"1. That the disease is communicable during the period extending from the commencement of the fever to the appearance of the eruption; and that any cases showing febrile symptoms during such an epidemic as we have lately experienced should be closely watched, in order that they might be isolated early and the linen be thoroughly disinfected.

"2. That the ordinary temperature of the water in which infected sheets are washed—which was *said* in this instance to have been boiling—is not sufficient to destroy the fever-poison.

"3. The importance of disinfection of all linen used by patients suffering from this disease by any of the ordinary disinfectants generally employed. After the 22d or 29th of December all the cases attacked were discovered before the linen-changing days; the sheets were therefore thoroughly steeped in a solution of carbolic acid before they were sent to the laundry. It is a fact worth observing, that but two cases were infected that could be attributed to the sheets after the above dates.

"This outbreak also supplies us with further evidence, if any were required, of the protective power of revaccination against smallpox. On the 12th of

January almost all the patients and inmates were subjected to this operation, and there has not occurred a single case of smallpox since the 14th of January.

"Besides the care taken to disinfect the sheets in all the cases after the 22d of December, much of our immunity from the disease after this date is no doubt to be attributed to revaccination."

Art. XV. *Results of Recent Vaccination in St. George's Hospital*, by RICHARD WILSON, Esq.—In order to limit the epidemic of smallpox which broke out in St. George's Hospital, all the nurses and patients were vaccinated, with the gratifying result of stopping the spread of the disease. In this paper are given the results of the vaccination.

Art. XVI. *Results of Revaccination in the 1st Regiment of Life Guards*, by EDGECOMBE VENNING, Esq.—In this paper are presented the statistics of 478 revaccinations.

Art. XVII. *Annual Report of Medical Cases during the year 1869*, by REGINALD E. THOMPSON, M.D.—From this report we learn that the daily average number of patients in the medical wards was 136; the rate of mortality, 13.4 per cent.; mean residence, twenty-six days.

Art. XVIII. *Annual Report of Surgical Cases during the year 1869*, by WILLIAM LEIGH, Esq.—The number of cases admitted was 2013, and the rate of mortality was 5.7 per cent.

Art. XIX. *Ophthalmic Report from October, 1870, to February, 1871*, by R. BRUDENELL CARTER, Esq.—This report contains a very full and interesting account of the various diseases of the eye treated in the hospital.

Art. XXI. *Notes taken in a German Feld-Lazareth*, by W. EWART, Esq.—This paper is a rambling sketch of the observations of a hospital student, made during the Franco-Prussian war, and contains but little of interest to the general reader.

I. M. H.

ART. XXVI.—*The Liverpool Medical and Surgical Reports*. Edited by P. M. BRAIDWOOD, M.D., and REGINALD HARRISON, F.R.C.S. Vol. III., pp. 140; and Vol. IV., pp. 200. London: John Churchill & Sons, 1869 and 1870.

ALTHOUGH neither of these volumes is very large, the contributors to them are very numerous. The communications are, consequently, very short, and consist of very little more than reports of cases. Many of these are sufficiently interesting, it is true; but, as a whole, the volume seems to us to represent, to a very limited extent, the intelligence which must exist in the medical profession of so large a city as Liverpool. In fact, the editors seem to have been themselves aware that the communications were insufficient to float the volumes by themselves, for they have appended to both of them abstracts of the proceedings of two societies; and to the fourth volume, periscopes of Medicine, of Surgery, and of Midwifery and Diseases of Women.

MR. ROBERT HAMILTON contributes an article on *Carbolic Acid in Surgery*, to the third volume; and one entitled *Illustrations in Operative Surgery* (illustrated). Several cases are reported in the first paper, in which carbolic acid dressings were used. These were found to be especially useful in wounds, opening the knee-joint in compound dislocations, in stabs of great depth, and in large lacerations; and their superiority to water dressings and poultices consists in their greater cleanliness, absence of smell, diminution of discharge,

and increased comfort to the patient; and not in the rapidity of healing. Mr. Hamilton does not deny that carbolic acid may act in many cases beneficially by destroying organic germs in the air, but he hesitates to accept this as the only explanation of its action.

In the second paper, Mr. HARRISON reports a case of *Excision of the Shoulder-Joint*, and one of *Excision of the Upper Jaw*.

Dr. WATERS is the writer of *Observations on the Treatment of Pneumonia, with an Analysis of the Cases treated by the Author*; appended to which is an abstract of fifty-nine consecutive cases of acute pneumonia, treated by him in the Liverpool Northern Hospital. Dr. Waters is well known as a strong advocate of the restorative treatment in pneumonia, and he has good reason to congratulate himself upon its success; for, of the fifty-nine cases, but two died; and one of these was admitted in almost a sinking state. In about one-third of the cases, small doses of antimony were given; in a few cases, mercury was given for its purgative effect. In a large proportion of the cases, alcoholic stimulants formed the main therapeutic agent; and in some of the most severe, no other medicine was given. Beef-tea and milk were administered in all the cases, at regular intervals.

Mr. W. M. BANKS writes *On Some Peculiar Results of Injury to Digital Nerves*. In two cases, a cut with a sharp instrument was inflicted on a digital nerve. The wounds healed; but, shortly afterwards, severe pains arose in the cicatrix, which soon involved the affected finger, then the hand, and finally the whole arm and shoulder. The peculiar glazed appearance to which Drs. Mitchell, Morehouse, and Keen have called attention in their work on *Injuries of the Nerves*, was noticed. Immediate relief to the symptoms followed the excision of a small portion of the affected nerve. In another case, the cicatrix which followed a very slight injury to the finger was described as "a smooth, slightly elevated, glassy-looking hardness, resembling a corn which had been pared down." The slightest touch on this point caused great agony, although the rest of the finger was not excessively tender. The callosity was carefully cut out, and when removed there were visible, in the bottom and at the edges of the wound, a number of Pacinian bodies, and a very distinct nerve-filament was seen running right into the callous cicatrix, and incorporated with it. In both of the cases in which a portion of a nerve had been excised, sensation in the region of its distribution was almost completely re-established in the course of a few days.

Dr. DE ZORCHE contributes to vol. iii. an article *On Sea-sickness*, in which he takes the ground that the continued retching in this affection is to be attributed to the very acid condition of the secretions of the stomach; and he has found that it will generally yield if the alkalies, combined with aromatics, are administered. The giddiness, which is also a constant symptom, he attributes to anæmia of the brain.

Mr. BICKERSTETH, in the third volume, gives us some *Clinical Observations on Submaxillary Cellulitis*, which are illustrated by several cases. The symptoms in one of the cases are thus described: There was a considerable diffuse swelling, occupying the entire submaxillary space, and extending, on either side, beyond the angles of the jaw. The floor of the mouth was noticed to be raised; and, by placing one finger in the mouth and another outside beneath the jaw, an indistinct sense of fluctuation could be detected. Deglutition was very difficult, the articulation indistinct, the dyspnoea extreme, and the constitutional symptoms severe. The countenance was suffused and dusky, the lips blue, skin moist, pulse weak, between 130 and 140. In these cases, Mr. Bickersteth recommends that a free incision in the median line, extending from near the

points of the chin downwards to the hyoid bone, and deeply upwards and backwards towards the base of the tongue, should be made whenever the disease does not yield to leeches, fomentations, &c.

In the fourth volume we find *Notes of Cases treated upon Antiseptic Principles*, by the same gentleman.

Dr. WALLACE reports several cases of *Thoracentesis*, in the fourth volume.

A paper *On Fractured Ribs in Insane Patients*, contributed by Dr. T. L. ROGERS, Medical Superintendent Rainhill County Asylum, to the fourth volume, is one of the most interesting of the series. Having observed that the bones, and especially the ribs, of the insane were very easily fractured, he had the ribs of several general paralytics analyzed by Dr. J. C. Brown, and the result of the analysis may be stated to be as follows: The ratio of organic constituents to earthy matter is much greater, while the ratio of lime to phosphoric acid is distinctly less, in the ribs of paralytics than in those of healthy adults. There are the same differences between the composition of healthy ribs and those of paralytics, as between the composition of the adult large bones and those of the fœtus. He is inclined to think that the same degeneration of the bones will be found to exist in the subjects of other forms of insanity.

The Cancerous Degeneration of the Kidney in Children, is the subject of a paper in the fourth volume, by Dr. BRAIDWOOD. Three cases are reported; one of them, the first, being of great interest. The disease does not seem to be rare in children, since Dr. Roberts has collected no less than nineteen cases, affecting children less than ten years of age. It is almost always encephaloid in character. Whenever an abdominal tumour coexists with hæmaturia, the diagnosis of cancer of the kidneys is probable; but the absence of this symptom does not, by itself, exclude it. The paper is accompanied by a plate, illustrating the microscopic appearances of the disease.

The other papers, and the Proceedings of Societies, contain so little that is novel or interesting, that we forbear occupying additional space to give an abstract of them.

J. H. H.

ART. XXVII.—*What is Malaria? And why is it most intense in Hot Climates? An Inquiry into the Nature and Cause of the so-called Marsh Poison, with Remarks on the Principles to be Observed for the Preservation of Health in Tropical Climates and Malarious Districts.* By C. F. OLDHAM, M.R.C.P.E., M.R.C.S.L., Assistant Surgeon H. M. Indian Forces. 8vo. pp. xvii., 186. London: H. K. Lewis, 1871.

THE question, "What is Malaria?" has perplexed others besides Dr. Oldham, and we venture to say will, in spite of the ingenious theory as to the origin of the so-called Malarial Fevers which he advocates, continue to agitate the medical profession. There is a certain convenience in assuming that these diseases are caused by a specific poison, called malaria; but no one except Dr. Salisbury has, we believe, ever asserted that he had actually discovered and isolated this poison. It is generally held, in this country at least, that the cause of the various periodical affections is the exhalations given off by decomposing vegetable matter. Close and accurate observers have, however, repeatedly pointed out that malarial fevers are prevalent and virulent in localities where vegetation, far from being luxuriant, is almost or entirely absent. In 1791, writes Fergusson, after a very hot and dry summer, intermittent and remittent fevers

were epidemic in the army encamped at Rosendaal and Oosterhout, in Holland; adding: "The soil in both places was a level of land with a perfectly dry surface, where no vegetation existed or could exist but stunted heath plants." From this, and similar instances which he refers to in a paper "On the Nature and History of the Marsh Poison," published in the *Edinburgh Philosophical Transactions*, Dr. Fergusson was led to believe that neither marshes nor vegetation were necessary to produce malaria; but, on the other hand, this may prevail where these have never existed, or, having once existed, have, in consequence of drying, ceased to exist, and wholly irrespective of vegetation, living or dead; that marshes could only be injurious when they had become dry, and when the sensible putrefaction of water and vegetables had alike become impossible; and that a healthy condition of soil, in the pestiferous regions, was infallibly regained by the restoration of the marshy surface to its utmost vigour of vegetable growth and decay. Dr. Oldham quotes very similar opinions from the writings of Morehead, Bennett, and others, and gives instances which have occurred in his own experience, and in that of others, which sustain his assertion that malaria is independent of vegetable decomposition. It is, of course, well known that Dr. Wood, in his *Treatise on the Practice of Medicine*, expresses the opinion that in those places where malaria prevails, and where vegetable decomposition is, apparently, not the cause of it, careful investigation will show that the soil contains a large amount of organic material, or that the prevailing winds blow from a malarious region. Dr. Oldham shows, however, that fevers prevail in some districts where the soil is either rocky or sandy, and is found, when analyzed, to contain a very small amount of organic matter. He is indisposed, also, to attach much importance to the influence of the wind to the dissemination of the germs of malarious disease, and refers to the fact, that while the soldiers encamped in the island of Walcheren and in South Beveland were suffering severely from fevers and from dysentery, the sailors of the fleet under Commodore Mitchell, lying in the channel between them and exposed to the wind blowing at different times from both shores, did not suffer at all, although they could not have been at a greater distance than three thousand feet from the sources of the emanations. He, therefore, finds himself forced to the conclusion that malaria, as a specific poison, does not exist; but that the cause of the diseases attributed to it is chill, or, in other words, the sudden abstraction of animal heat. He thinks, moreover, "that the extreme susceptibility to cold, which is caused by long-continued exposure to great heat, intensifies the predisposition to the diseases referred to, thus causing their greater prevalence in hot climates; and that a further effect of great heat upon the system, more especially in the white races, is, by lowering the vital power, to render the type of disease more grave. Thus it arises that, in cool climates, the powerfully chilling influence of damp is necessary to the development of malaria.¹ In such climates, consequently, malarious fevers are rarely found in any but humid and marshy spots; and they generally occur in autumn, that being the period of transition from greatest heat to greatest cold; and, also, the time when the difference is most marked between daily and nightly temperature." This view, as Dr. Oldham himself intimates, does not

¹ The state of the weather about this period is highly deserving of notice; the heat is described as being extreme at one part of the day, whilst at another they were annoyed with a cold damp, accompanied with violent rain. Indeed, it is said that from first landing in Walcheren, not a single day had passed without rain.—*A Scientific and Popular View of the Fever of Walcheren*, p. xiv. By J. B. Davis, M.D. London, 1810.

differ from that held by Hippocrates, Paulus Ægineta, and Celsus—the former of whom attributed the diseases of autumn, in part at least, to the great and sudden variations of temperature which occur at that season.

Dr. Oldham shows very conclusively that all hot climates are not equally liable to the charge of engendering malarial disease. Periodical fevers are almost unknown in hot countries, in which the diurnal range of temperature is slight; and in those in which they prevail to the greatest extent they rarely make their appearance before the season of autumn, when the nights are sensibly cooler than the day. Moisture merely acts by furnishing to the atmosphere a good conductor, by means of which heat is more readily abstracted from the human frame. Hence it is that the vicinity of marshes is found to be unhealthy in temperate climates. In tropical countries, the disease may arise in the absence of moisture, provided the setting in of night be accompanied by a rapid and marked fall of temperature, or the subject of it have been exposed to the chilling influence of the wind. Great heat undoubtedly gives rise to many ailments, but can only predispose to intermittent and remittent fever by causing a condition of debility in which the heat-producing power is paralyzed and greater susceptibility to cold induced.

Mere humidity, in the absence of alternations of heat and cold, cannot be looked upon as an efficient cause of malarial fevers, for “in Demerara and Surinam, where the atmosphere is very moist, and the rain-fall great, the planters live, as mentioned by Fergusson and others, close to swamps, which, though far from healthy even there, would in most countries be deadly.” This immunity from malaria Dr. Oldham ascribes to the diminution of the nightly chill, owing, in great measure, to the constant humidity of the atmosphere.

There are certain facts which seem to corroborate Dr. Oldham's view. Thus the river Amazon flows through a marshy country, but malarial diseases do not prevail upon its banks; while, on the other hand, they are excessively virulent upon the borders of some of its tributaries. This immunity of the valley of Amazon is attributed by Humboldt to the strong wind which, rising two hours after mid-day, blows constantly against the stream, and must tend to render the climate mild and equable, and in effect the decrease of temperature at night has been found by Bates never to be more than a pleasant coolness. On the branch rivers, where the sea-breeze is not felt, “the air is hot, sultry, and stagnant by day, and chill and damp by night.” It has been hitherto difficult to explain the occurrence of malarial diseases upon rocky surfaces, for here we certainly cannot have organic matter in the process of decay; the difficulty is not so great, if we accept the theory urged in the book before us. Certain rocks become intensely heated, if exposed to the direct rays of the sun. Thus Humboldt says, that “when walking between the hours of one and three in the afternoon at Carichana, Atures, or Maypures, amongst blocks of stone, destitute of vegetable mould, and piled up to great heights, one feels a sense of suffocation, as if standing before the opening of a furnace.” During the *night*, the temperature of the rocks was observed to be 21.6° F. lower than during the day. This theory explains, also, the well-known fact, an instance of which has already been referred to in the course of this notice, that ships at sea, although lying within a short distance of a malarious coast, frequently seem to enjoy a protection against the inroads of the disease, provided that there is no communication with the shore, or communication with the shore only during the day. It is well known that all bodies of water become heated very slowly, and give out their heat very gradually, and, consequently, the atmosphere at sea is not subject to the same vicissitudes of temperature as on shore. Water, however, to afford this immunity, must be of some extent, and have depth; hence, the

navigators of rivers in malarious regions are not less liable than the inhabitants of their banks, to the diseases of the country.

We are able, also, to understand the influence of fire and of smoke in counteracting the effects of malaria; for the effect of a large fire must be to heat the current of air passing over it, depriving it of part of its moisture; while the smoke, forming a cloud overhead, effectually checks the radiation—a fact, we may add, perfectly well known to the peasants of the valley of Chamouni, who build fires of green wood, in order that the valley may be overhung by a canopy of smoke, which, reflecting the heat radiated from the earth, thus prevents the formation of frost.

The individual who has once suffered from periodical fevers is liable, for some time afterwards, to vernal and autumnal relapses of the disease. These were difficult of explanation under the theory which attributed the original attack to the influence of the emanations from decomposing vegetable matter, but this difficulty, Dr. Oldham thinks, disappears, if the theory which he advocates be adopted. It is in the spring and fall that the diurnal range of the thermometer is greatest, and, consequently, it is at these times that the effects of the abstraction of heat or chill are most likely to be experienced. Our author, in support of his views, advances the fact that those who are least protected against cold are those who are most apt to suffer from malarial fevers, and, consequently, that the officers of the Indian army, and the merchants of India, enjoy a comparative immunity from affections which are of frequent occurrence among the common soldiers and the Hindoos.

In the preceding abstract, we have endeavoured to lay before our readers Dr. Oldham's views as to the cause of diseases which have been hitherto attributed to malaria. There is, certainly, much in them that is novel to those who are acquainted only with the works of the most popular writers on malarial disease; and we certainly cannot refuse him the tribute due to one who has had good opportunities of studying the subject, and has made good use of them. We find ourselves, however, not fully convinced by his arguments, although we confess he has done much by them to destroy the wavering faith we reposed in the more generally accepted theory.

J. H. H.

ART. XXVIII.—*Clinical Report of the Rotunda Lying-in Hospital for the Year ending 5th November, 1870.* By GEORGE JOHNSTON, M.D. Edin.; Fellow of the King and Queen's College of Physicians; Master of the Rotunda Lying-in Hospital, etc. etc. Printed for the Author by John Falconer, Dublin, 1871.

THIS valuable Report, first read before the Dublin Obstetrical Society, has been reprinted in a pamphlet form from the *Dublin Quarterly Journal of Medical Science*, February, 1871. Although bearing the traces of being provoked by the two great controversies on Hospitals and Hospitalism, between Sir James Simpson and Mr. Holmes, and between Dr. E. Kennedy and the Dublin Obstetrical Society, in which the author took an active part, it is a sober and logical paper, singularly free from any exhibition of partisan warmth.

The author has here utilized the statistics of a year's work at the Rotunda, in order to prove the four following propositions:—

"1. That zymotic disease (puerperal fever) does not prevail endemically in large lying-in hospitals.

"2. That puerperal fever, when it is endemic, does not necessarily make its appearance in great maternity hospitals in the first instance.

"3. That, where perfect cleanliness in every particular is maintained, and labour not allowed to proceed too far unaided, there is no miasm emanating from the puerperal patient.

"4. And that, where there is sufficient cubic space of air for each individual, and thorough ventilation observed, the wards can be kept without a hospital atmosphere."

The data used for this purpose are as follows: During the 365 days, from November 6, 1869, to November 5, 1870, inclusive, there were delivered in the Rotunda Hospital 1087 women; of whom 344 were primiparæ, and 743 pluriparæ. Of this number, 851 had natural labours; 30 abortions; and 11 tedious labours, viz., those exceeding 24 hours in duration, but terminating without artificial aid. There were 56 preternatural cases; of which 9 presented the upper extremity; 47 the lower extremity or breech. In 19 of these cases version had to be performed.

There were also 86 cases of difficult labour, viz.: 83 requiring the forceps; 2 craniotomy; and 1 evisceration. Still further, to show that the usual amount of difficulties and dangers had to be encountered, there were 84 instances of complicated labour. Thus, there were 18 twin and 2 triplet cases; 11 cases of accidental, 7 of unavoidable, and 11 of post-partum hemorrhage; 5 of adherent placenta; 12 of prolapsed funis; 5 of convulsions; 1 of rupture of the uterus; 2 of rigid perineum requiring incision; 9 of mania, and 1 of Cæsarean section (after death).

The total number of deaths amounted to 17, viz.: 2 from gangrene of the uterus; 1 from rupture; 1 from post-partum hemorrhage; 2 from placenta prævia; 1 from accidental hemorrhage; 3 from *peritonitis*; 3 from *pyæmia*; 1 from sloughing of the cervix uteri; 2 from pleuritis and pneumonia, and 1 from apoplectic convulsions. This ratio of deaths—1 in 64—is by no means large, when it is borne in mind that the greater number of the poor creatures who seek the shelter of the Rotunda are persons in the most abject poverty and wretchedness. Many are addicted to intemperance, or have been abused by drunken husbands; others are the victims of seduction, who, from distress and anxiety of mind, are especially obnoxious to puerperal diseases. While, again, not a few, after being neglected by friends or maltreated by unskilled attendants, are at last brought to the hospital in a hopeless and dying state.

It is worthy of note, that out of these 17 fatal cases, there were only 6 from metria. There occurred, it is true, 29 cases of *peritonitis*, of which all recovered but three; and also 5 of *pyæmia*, of which three died. But no miasm emanated from these patients, and in not a single instance was the disease communicated to the occupants of the same ward, or of adjacent beds. Yet, during this same year, while the hospital was free from endemic diseases, sickness of a zymotic character prevailed over the city of Dublin. The Registrar-General's Report shows, that out of the seven districts which supply the hospital with inmates, there were 1380 deaths from zymotic disease alone. This great mortality, when compared with the good health of the Rotunda inmates, conclusively proves to the author that the lying-in wards of a well-regulated hospital can be kept free from such epidemic diseases as may be prevailing outside.

Whenever statistical premises stand the test of rigid scrutiny, their inferences have a certain weight which we instinctively respect; and, to our thinking, Dr. Johnston's data go far towards sustaining the propositions with which he opens

his paper. We say this, however, with some diffidence; for deductions from groups of figures should always be received with due reserve. The human mind so yearns after the exact and the positive, as, in its impatience, to extort rather than to deduce from statistics. Hence, isolated experiences, too often partisan and prejudged, are likely to be incoherent rhapsodies, incapable of interpretation.

We should much like to pursue the analysis of this instructive paper, but have space only to note, in the Dublin practice of midwifery, a remarkable change of opinion with regard to the value of the forceps. During the Master-ships of Drs. Clarke and Collins, of the 26,853 deliveries within the walls of the Rotunda, in only 41 was the forceps applied. But, from the report before us, it appears that in Dr. Johnston's 1087 cases of labour, the forceps was resorted to 83 times. This better appreciation of a valuable and harmless instrument is undoubtedly due to the great influence of Dr. Beatty, whose straight forceps is the best of its kind.

In conclusion, we regret that this valuable contribution has been marred, not only by the inexcusable carelessness of the printers, but also by the evidences of haste on the part of the author. We shall not weary our readers with the too numerous proofs of these assertions; suffice it to say, that many typographical blemishes offend the eye; and that the nationality of the present accomplished Master of the Rotunda can never be in dispute, after such a sentence as—"The forceps were applied and delivered of a girl." W. G.

ART. XXIX.—*On Some Disorders of the Nervous System in Childhood*; being the Lumleian Lectures delivered at the Royal College of Physicians of London, in March, 1871. By CHARLES WEST, M.D., Physician to the Hospital for Sick Children. 12mo. pp. 128. Philadelphia: Henry C. Lea, 1871.

It was natural, of course, that Dr. West should choose some one of the ailments of children as the subject for his Lumleian Lectures, and we think that there are few physicians who will, after reading the little book in which these are collected, regret that he has done so. As the title implies, all of the disorders of the nervous system in childhood are not discussed, and it is not pretended that any one disease is considered in all its different relations. His object has been to give to the Fellows of the College the benefit of his experience, and to draw their attention to points which are often only incidentally alluded to, or even wholly passed over, in systematic treatises. He has chosen as he has, because he thinks that the disorders of the nervous system of children are very frequent and very fatal, and because their peculiarities are more remarkable than those of any other class of diseases. These peculiarities he attributes "to the circumstance that the nervous system is more unformed, its functions more rudimentary, its condition one of change and development, the like of which does not take place in the organs of respiration, circulation, or even of digestion."

Dr. West calls attention to the excessive rarity of pain in childhood except as a symptom of local disease, and says that the neuralgic affections so common in adults are of very infrequent occurrence in early life. This is especially true of pain in the head, and a child who complains of pain, either diffused all over the head or confined to the frontal region, should be closely watched, for it will

generally happen that it will sooner or later present other indications of cerebral disease.

Neuralgia may, however, occur in children, as well as in adults, and in reference to the diagnosis between the simpler and severer affection, he uses the following language :—

“It may, however, be of some use to bear in mind that neuralgic pain is localized in some part of the head; that while it is very intense and accompanied with excessive intolerance of light and sound, it is also often attended with weeping; and the importance of tears as disproving the existence of real inflammatory disease, either in the head or chest, first dwelt upon by Trousseau, cannot be overrated.”

A large part of the first lecture is devoted to the consideration of epilepsy, which, when occurring in childhood, the author believes to be dependent to a much greater degree on disturbance of the nervous system, dating back from infancy, than on hereditary influence, which comes into play later in life, just as it does in the production of hysteria and insanity. He believes also that children are more frequently affected by the form of the disease which is known as the *petit mal* than is generally supposed, and that such an onset of epilepsy is at least as common in children as in adults. In regard to the treatment of epilepsy, Dr. West says that much can be done towards diminishing the frequency and severity of the paroxysm by exercising a judicious influence over the child, and that no remedy has been so uniformly successful in his hands as the bromide of potassium, but admits that there are cases in which it utterly fails, and that he does not know of any means by which the two classes of cases can be distinguished before the administration of the remedy.

Chorea and various paralytic affections are discussed in the second lecture. In regard to the former, he says, that “there is undoubtedly a connection between that state of constitution which predisposes to chorea and that which predisposes to rheumatism,” but that it is not easy in the present condition of knowledge, to say in what this connection consists. It is certain, however, that the former disease cannot in all cases be regarded as dependent upon the latter, attacks of which it occasionally precedes and sometimes accompanies. Neither does he believe that diseases of the heart invariably precede the occurrence of chorea, for he holds that the latter, so far from being always the result, may sometimes itself be the cause of the former. “The doubt,” he says, “has occurred to me, whether the heart affection may not in some of these cases be due to the disturbance of the organ in its attempt at regular contraction, and to the consequent yielding of its walls, rather than to the trouble produced by actual valvular disease,” and this would certainly seem to have been the cause of the dilatation of the heart in one of the cases which he reports. The drugs which he has found most useful in the treatment of bad cases of this disease are tartar emetic and sulphate of zinc, both given in large doses.

In the remaining lecture are considered disorders and loss of the speech in children, and various mental and moral peculiarities presented by them, but our notice is already too long, and we must therefore close with a very brief allusion to a few points.

Among these is a caution which the author gives us, not to look upon every child who exaggerates his ailments, as necessarily shamming. This is often done by children simply to procure the gratification of that intense craving for sympathy which characterizes them. “Over and over again,” he says, “I have met with instances, both in private and hospital practice, where the motives to such deception were neither the increase of comfort nor the gratification of mere indolence, but the monopolizing the love and sympathy which during some by-

gone illness had been extended to them, and which they could not bear to share again with their brothers and sisters." The child in this condition needs as much care and as judicious management, both bodily and mental, to bring it back to health, as would be called for in the case of some adult monomaniac or hypochondriac.

It may not be generally known that stammering, and the same is true of somnambulism, is more frequent in the children of the educated than in those of the poor, and this is attributed to the fact that the infirmity comes with self-consciousness, with mental culture, and with the highly-wrought nervous system. For these reasons, also, stammering is rare before the commencement of the second dentition.

A large part of this lecture is devoted to the consideration of the tardy acquirement of the power of speech. This, as is well known, does not generally indicate a deficiency of intelligence, and the fears of parents may often be quieted by pointing out to them that the child notices modulations of sound, and that he is able to give expression to his ideas by means of pantomime. One case is reported in which aphasia was a symptom of disease of the right side of the brain. This case occurred in a little girl only five years old, who had sunstroke, followed by coma of a fortnight's duration, and attended with hemiplegia of the right side, and with loss of speech. At the end of two years she had grown, and looked healthy and intelligent; but although she had partially recovered the use of her limbs, she had regained to a very limited extent the power of speech.

Dr. West says that he has been made to a great degree a specialist against his will, and has thus been compelled to limit his endeavours to the culture of but a small part of the field of medicine, but we think he has, in this particular at least, no cause to quarrel with fate, for his lines have fallen in places which must be to him exceedingly pleasant. Perhaps the fondness for children which he admits he possesses, and the ability to sympathize with them in their sorrow, has been of more service to him than he suspects in the study and treatment of their diseases. We regard the little book, unpretending as it is, as a worthy companion to his systematic treatise on "Diseases of Children," and think Mr. Lea has done a service to medical literature by republishing it in this country.

J. H. H.

ART. XXX.—*Ueber den Einfluss des Höhenklima's auf verschiedene Erkrankungen, mit Rücksicht auf die im Sanatorium in Aussee in Steiermark gemachten Beobachtungen.* Von Dr. J. SCHREIBER in Aussee. Separat-Abdruck aus Kisch's Jahrbuch für Balneologie, Hydrologie, Klimatologie, 1871. 1. Bd. 8vo. pp. 22. Wien, 1871.

On the Influence exercised upon different Forms of Disease by the Climate of Mountainous Regions, with reference to Observations made at the Sanatorium at Aussee in Steiermark. By Dr. J. SCHREIBER, of Aussee. Republished from Kisch's "Jahrbuch" for 1871. Vol. 1.

THIS work by Dr. Schreiber contains, considering its size, a very large amount of valuable practical observations. As principal of a mountain sanitary institution, he briefly sketches the diseases and the cases of impaired health, the cure or amelioration of which is best attained in the air and meteorological conditions of elevated places.

In the Sanatorium at Aussee, during the year 1870, 146 patients were treated. Of these, 89 were affected with definite diseases, while the remaining 57 were short-breathed, weakly individuals, the victims of too close and prolonged intellectual labour or of some moral disturbance; or whose impaired health, without any recognized or actual cause, is ranked by physicians under the general category of "unwell or out of sorts." To these cases of impaired health not the result of recognizable local lesions, the air of elevated regions is found by experience to be highly favourable, and the improvement gained by exposure to it, with aid simply of appropriate diet, clothing, and regimen, is believed to be in the majority of cases complete and permanent.

The following are presented by Dr. S. as the leading diseases and conditions of impaired health successfully treated in the Sanatorium at Aussee: Convalescence, chlorosis, dyspepsia, chronic catarrh of the stomach, intumescence of spleen, non-specific infiltration of the inguinal glands, pleural exudation, retro-peritoneal exudation, and scrofulous, anæmic, and chlorotic subjects generally.

Dr. S. refers to two groups of diseases in which the curative influence of a mountainous climate has been found to exert most triumphantly a healing influence, namely, simple lesions of the nervous system, and chronic diseases of the respiratory organs. Cases are described in extenso of nervous asthma, chronic pneumonia, and chronic bronchitis, that were successfully treated.

But the most interesting portion of the work before us is that which relates to the very general immunity of the inhabitants of mountainous tracts from tubercular phthisis, as well as the prevention of the development of the disease in the predisposed, and the marked amelioration or even the arrest of all the prominent symptoms in those who are already affected, wrought by a continued residence in mountain air.

Dr. Gaustor traversed the Alpine ridge which extends from Rottenmann (Steiermark) to Villach (Carinthia), and from Laibach towards Tarvis, crossing, thus, the highest and steepest portion of the mountain chain, and, at the stations at different elevations along the route, he noticed, from the results of inquiries put by him to the resident physicians of the several mountain villages, the extent to which tubercular phthisis prevails in each location. The following are the results of Dr. G.'s investigations.

From Rottenmann, at an elevation of 2184', to Trieben, at an elevation of 2226', for the most part, there are to be met with but very few cases of phthisis.

In the route by Trieben, covered by forest (elevation 2684'), Kulwang (2393'), Mautern (3205'), according to the testimony of the local physicians respectively, cases of consumption do not occur.

From Mautern, southwardly, to Unuzmark (2291'), isolated cases of the disease are occasionally met with. Here the ridge begins again to ascend, and passes over, at an elevation above the sea of 2794', Schauerfeld, the highest point along the route. As the ridge increases in elevation, phthisis again gradually disappears. From Scheifling (2500') to Einöd (2313') phthisis is absolutely unknown, while at the station Friesach (1985') the physicians are frequently called upon to treat cases of the disease.

A very different condition of things prevails along the route from Laibach to Tarvis. Here pulmonary consumption prevails in every village, even at the highest point, Ratschach, at an altitude of 2704' above the level of the sea.

Dr. G. believes himself warranted in assigning an altitude of 2300' as the limit at which there exists an immunity from the occurrence of pulmonary consumption, provided there exist dense forests. But in the absence of forests the line of immunity from the disease will be found to be at a greater elevation. This will be shown by the fact that from Laibach to Travis there is an

absence of forests, the entire route presenting only bare rocky precipices. The fact is explained by Dr. G. by the great daily consumption of carbonic acid gas in the process of vegetation. In his work on "Forests and their Influence on Climate," Becquerel presents a different and perhaps more correct explanation. He ascribes the immunity from lung diseases in Alpine regions clothed with forests, to the circumstance that the latter prevent a rapid evaporation of dews and rains which fall upon the mountain heights, and preserve the atmosphere within and around them of an appropriate moisture.

According to all meteorological observations, the air of those portions of the Himalaya range, of the Andes, and of the Swiss mountains, where there exists an immunity from disease, is very moist, and the dews and rains are there copious. At one of these places, *Chera-Punji*, in Asia, more rain is said to fall than in any other elevated portion of the world.

The same observations were made by Dr. G. in respect to the altitude at which the line of immunity from consumption commences at Lavantthale (*Carinthia*), where he practised his profession for four years.

In Norway, during the year 1870, experiments were made by lodging individuals strongly predisposed to tubercular phthisis in elevated regions, where the general character of the air was decidedly humid; as at Sognefjord and Hardangerfjord. The results of these experiments were so favourable, as to induce the physicians of the neighbourhoods to undertake a renewed course of experiments of a similar kind.

Dr. G. remarks, that the cattle belonging to dwellers in deep valleys are kept during the winter in low, confined, and ill-ventilated stables, in consequence of which, before spring they become phthisical and greatly emaciated; but when summer comes, and these very beasts are driven forth from their miserable stalls in the valley, to graze amid elevated meadows situated upon the acclivities and summits of the mountains, they in a short time regain their health and flesh, so that before long few who saw them leave the valley, looking upon them now, would recognize them as the same beasts.

A horse affected with lung disease, it being shown by percussion that pulmonary tuberculosis had already set in, was turned out to graze upon a mountain meadow, and in a comparatively short time regained his health.

Dr. G. has so far practically tested the immunity from phthisis enjoyed by those residing on the Rudolph Ridge, that he has been induced to counsel a removal of phthisical subjects from other stations to that.

There are many other points of interest contained in the pamphlet before us worthy of notice, but not wishing to extend this article to an unreasonable length, we close here, merely remarking, that the general conclusions of Dr. S. in reference to the beneficial results to be derived by phthisical patients and those labouring under chronic affections, generally, of the respiratory organs, by taking up their residence in mountainous regions, correspond with our own investigations in that direction.

D. F. C.

ART. XXXI.—*Transactions of State Medical Societies.*

1. *Transactions of the South Carolina Medical Association, Annual Session, 1871*—Third Meeting since Reorganization—Held in Charleston, S. C., April 5th and 6th, 1871. 8vo. pp. 156.
2. *Transactions of the Vermont Medical Society for the years 1869 and 1870.* 8vo. pp. 233. Burlington, 1870.
3. *Transactions of the Eighteenth Annual Meeting of the Medical Society of the State of North Carolina, held at Raleigh, N. C., May, 1871.* 8vo. pp. 57. Raleigh, 1871.
4. *Transactions of the Minnesota State Medical Society, held February 7th and 8th, 1871.* 8vo. pp. 156. St. Paul, 1871.

1. THE *Transactions of the Annual Session of the South Carolina Medical Association* contains, in an appendix to the Journal of Proceedings, (*a.*) a paper by Dr. F. PEYRE PORCHER, the subject of which is, "Several General Propositions in Medicine, and Axioms with regard to Treatment, deduced from personal observation; on the Utility and Inutility of Medicines; and on the Coast Districts of South Carolina and Georgia as a Residence for Invalids." Upon these several topics the remarks are especially interesting, and, in their general features, those bearing upon general therapeutics are sound; they do not, however, strike us as particularly novel. Still, as they are the conclusions deduced from "the personal observations" of a well-instructed, closely-observing, and experienced physician, they are most valuable; especially so are the concluding portions of the paper, in reference to "the special advantages of the coast districts of South Carolina as a winter resort for settlers from more northern latitudes, and particularly for invalids."

We have to regret that our necessarily restricted limits will not permit us to give a full analysis of the next paper (*b.*), by Dr. FRANCIS L. PARKER, giving the "Report of a Case of Dislocation of the Wrist backwards, with a Review of the Cases of Dislocation at this Joint previously reported." From a careful perusal of the paper of Dr. P. many important practical hints will be acquired.

Dr. J. W. HILL relates a most interesting and instructive case (*c.*) of "Caesarean Operation," which proved successful in respect to both mother and child.

The next paper (*d.*), by Dr. F. M. ROBERTSON, is the history of a "Case of Placenta Prævia," with recovery of the mother. To the history are appended "remarks upon the views of recent writers on the subject." There is, we should say, much good sense in Dr. R.'s concluding remark:—

"Upon a careful consideration of the anatomical and physiological points that have been alluded to, we cannot fail to be convinced of the importance of considering each case of placenta prævia, with its management, as a distinct problem to be worked out independently. It would be unwise to recommend any one procedure as exclusively applicable to all cases. Such a course would, in many instances, lead to a fatal termination, which might have been avoided if the treatment had accorded with the views recently announced."

The succeeding paper (*e.*) is "A Critical Essay on Uremia, or Uraemic Intoxication," by Dr. J. M. GEDDINGS. Though an able production, we must dismiss it with merely stating that, according to Dr. G., in the present state of our knowledge, we may arrange the so-called uræmic phenomena in four categories, each of which he examines in detail: 1. Poisoning of the blood by urinary constituents—uræmia strictly so called. 2. Poisoning of the blood by

the product of the decomposition of uræa and its conversion into carb. ammon.—Ammoniaemia (Vogel, Treitz, Jaksch, *et al.*). 3. Nervous symptoms, induced by œdema and anæmia of the brain (Traube). 4. Coma and convulsions due to organic lesions of the brain and membranes, such as sanguineous and serous apoplexy, arachnitis, etc.

Following this is a paper (*f.*), by Dr. G. E. TRESCOT, on the "Study and Value of Therapeutics." The object of the writer is briefly to expose some of the most prominent grounds for our belief in the curative value of drugs, and some of the current themes in regard to the manner in which they are supposed to act.

The views advanced by Dr. T. will be understood by the following eight propositions: 1. In many diseases there is a natural tendency to recover, under the most diverse modes of treatment; even without any. 2. In many diseases organic changes incompatible with life begin so insidiously, and proceed so steadily and rapidly, that when detected little or nothing can be done for the patient. 3. In certain diseases, few in number, particular remedies act so beneficially in the vast majority of cases, that we are almost justified in saying the majority of cases of such diseases are *cured* by them. 4. In some diseases the manifestations of functional derangement so far precede any radical organic change, that by controlling the functional derangement we can relieve the organ which is endangered. 5. In some organic diseases, whilst we are ignorant of any remedy adapted to restore the affected organ to its normal condition, yet we possess remedies which can so far relieve effects of such organic disease as to warrant the assertion that it was to therapeutical management that the patient owed many years of life, many hours of ease and comfort. 6. In some few diseases no remedy has been yet discovered which would seem to offer any hope. 7. No physiological or chemical theory has yet been advanced in regard to the remedial powers of any one drug that has received the verdict of the profession—proven. 8. No physician, however eminent his abilities, however large his experience, can lay down absolute rules for the treatment of any disease.

2. The volume of *Transactions of the Vermont Medical Society* contains, in addition to the proceedings of the semi-annual and annual meetings of 1869, and of the semi-annual and annual meetings of 1870, the Address of the President, J. S. RICHMOND, M.D., and a number of papers, of more or less interest; a few of these do not admit of analysis within the space at our disposal, and the remainder are not possessed of sufficient novelty to require special notice.

3. The volume of *Transactions of the Eighteenth Annual Meeting of the Medical Society of North Carolina* contains, in an Appendix to the Minutes of Proceedings, first, a report, by Dr. R. J. HICKS, of a case of "Extensive Scleroderma," and two of "Empyema."

Dr. H.'s object in reporting the latter is the illustration of two important facts: first, that the entrance of air into the pleural sac in operating for empyema is harmless; and in the second place, that the injection of irritating fluids into the cavity is unnecessary, if not attended with danger. All that is necessary is to give free vent by paracentesis to the pus effused into the cavity of the thorax, and to prevent its accumulation in the future, by drawing it off through a catheter at short intervals. By this plan, sooner or later the pus ceases to appear, when the opening into the chest may be allowed to heal, after which the patient's entire restoration to health will speedily follow.

Dr. E. B. HAYWOOD reports an interesting case of "Traumatic Aneurism of the Superficial Palmar Arterial Arch," which was successfully operated on.

Several other cases were reported by different members of the Society, but do not present sufficient novelty to require particular notice.

4. In an appendix to the business "minutes" of the annual session for 1871, of the *Minnesota State Medical Society*, is the history of a "Case of Ovarian Tumour," by Dr. D. W. HAND. The patient was 43 years old, and the mother of six children. In June, 1866, when four months pregnant, she miscarried; a tumour was now discovered in the situation of the right ovary, which rapidly increased in bulk. In November, 1866, it had attained the size of a half-gallon measure, filling almost the entire right side of the abdomen, reaching upwards to the lower edge of the liver. Towards the latter part of November there occurred suddenly a profuse discharge, a pint or more, of a white flocculent fluid; it recurred at intervals for about two weeks, and then ceased entirely. The tumour in the meantime was reduced one-half in size, and all the disagreeable symptoms connected with it disappeared. A vaginal examination detected a small fistulous opening on the right of the cervix uteri. The uterus was freely movable in the pelvis. There had been no cellulitis. There had evidently occurred a rupture of a cyst into the vagina, and from the intermittent character of the discharge, it was presumed that the tumour was multilocular, or that two or more cysts had broken down in succession.

A year subsequently the patient had another miscarriage at two months, and lost a great deal of blood; she has, nevertheless, enjoyed since quite good health. January, 1871, she is strong and comparatively well. Her complexion is good. The tumour, now about the size of a pint pitcher, is almost always painless, save at the menstrual periods. She thinks it is again slowly enlarging.

A case is related by Dr. E. R. FLETCHER, of a patient who died from the ulceration and gangrene of an enormous fatty tumour seated on the inner surface of the right thigh, giving to the limb a circumference of 52 inches.

Several other cases and reports follow, but they do not present sufficient interest to require any special notice.

D. F. C.

ART. XXXII.—*O Correio Medico de Lisboa, Publicação Quinzenal.*
The Lisbon Medical Courier, a Fortnightly Publication.

This periodical, devoted to frank criticism of medical publications, a record of debates in medical societies, and of original communications, began July 1, 1871. The responsibility of each article rests with its signer. It is a small quarto in form, printed in double column, in large, readable type. Each number consists of twelve pages. We have received the first and second and part of the third numbers. The first article is on traumatic epiplocele, by Ferraz de Macedo; the second is the history of a case of absence of the vagina, with atresia of the uterus, which was cured by surgical operation by Alves Branco. These are followed by the report of a committee on the "sleep disease," "sleep dropsy," or "lethargus," which occurs in St. Thomas and Isle of Principe, western coast of Africa, the prominent symptom of which is an apparently irresistible tendency to sleep, which slowly and gradually becomes more profound and continuous until it terminates in death. The patient, when aroused with difficulty from sleep, is in a state of intellectual torpor. In some cases emaciation and diarrhoea supervene. The paper is continued in the

second and third numbers. No conclusion as to the cause, pathology, or treatment is reached.

At a meeting of the Medical Society of Lisbon, Mr. Ferreira Ribeiro read the first part of a communication as to whether an unlimited use of sulphate of quinia as a preventive treatment of African fevers might not partly abate the intensity of its therapeutic effects. The question was discussed, but no conclusive evidence on either side was adduced by those who took part in the discussion.

There is a summary report of the proceedings of the Lusitanian Pharmaceutical Society, but it has a local interest only.

It is hoped that we may find in future numbers of this periodical interesting facts and opinions from our professional brothers in Portugal to place before our American readers.

W. S. W. R.

ART. XXXIII.—*The Modern Operation for Cataract. A Lecture delivered at the Harvard Medical School, April 5, 1871. With an Analysis of Sixty-one Operations.* By HASKET DERBY, M.D., University Lecturer on Ophthalmology, etc. Svo. pp. 23. Boston, 1871.

IN this lecture Dr. Derby has given a clear and concise account of the method of performing the peripheric linear extraction, and also of the after-treatment as laid down by the distinguished inventor of this mode of operation. Many practitioners, who although interested in the subject, do not pursue it as a specialty, and who have not at command the various formulas in which Graefe from time to time has published his views and results, will doubtless thank Dr. Derby for his able and lucid résumé of the subject. A quotation of his remarks on Iridectomy as an integral feature of cataract operations, and of the after-treatment, may not be altogether without interest.

"It is against this 'mutilation,' as it is termed, that so much outcry has been raised by the opponents of the school of Graefe. And we readily agree with them that a whole iris is better than a part of one, and that an eye on which no iridectomy has been done is a handsomer eye to look at and a slightly better eye to see with than one on which this operation has been performed. On the other hand, we assert that where the iridectomy is done upwards, and the aperture left thus covered by the upper lid, the unsightliness disappears, and the optical disadvantage is so slight as to be practically not worth regarding. Furthermore, we positively claim that the removal of a portion of the iris leaves an easier passage for the lens, guards against present inflammation, modifies what may occur later, and gives the eye a better chance of recovery. Statistics prove beyond a peradventure that an eye is less likely to be lost after an extraction accompanied by iridectomy, than after one where it has been omitted; and that there are now more cases of cure than before the introduction of this modification.

"The edges of the wound being well in contact, and all coagula removed from their vicinity, the eye is to be gently closed, no atropia being now used. The bandage is to be applied in the manner described in the last lecture, a circular piece of soft linen being first laid upon the eye, little tufts of charpie then evenly distributed so as to fill the orbital cavity, and the flannel roller finally passed thrice around the head and thrice over the eye, each ascending fold overlapping its predecessor and being carefully adapted to the equable support of the entire surface of the bulb. The charpie must be selected and of uniform fineness. It must be so applied that the hand, passed over its surface, fails entirely to appreciate the prominence of the bulb, and that slight pressure

upon it causes no sensation of pain. For the object of the bandage is, as you are well aware, to hold the edges of the wound in exact contact, and to maintain the conjunctival flap in close apposition with the surface of the sclera. If, now, we follow the example of many careless surgeons, and take only a single turn of the roller over the eye, which chances to exert more pressure on the lower half of the bulb and on the middle of the cornea than on the wound, we shall get just the reverse of what we desire to effect—the wound will gape and the conjunctival flap be raised. The other eye is to be closed with isinglass plaster.

“Another capital mistake is leaving the bandage undisturbed for several days, when no pain is complained of. It should be removed the evening of the operation, and again on the succeeding morning. After this it may be changed once in twenty-four hours. When the first change is made, traces of blood, tears, conjunctival secretion, possibly remains of cortical substance, will be found on the patch of linen next the eye; and it is readily conceivable that such a mixture, if left undisturbed, might decompose and become a source of infection to the eye itself. Graefe advises, on first removing the bandage, that the upper lid be gently raised and a hasty glance taken at the lower part of the cornea, by the aid of a single candle. He does not yet recommend the exposure of the wound.

“Graefe protests against a certain apathy with regard to the after-treatment of cases that do not seem to be doing well, which he has even seen evinced by some of the leaders of the profession. He believes in meeting the earliest indications with an energetic plan of treatment; and advises that particular attention be given to the least indication of pain in the region of the wound, that does not appear to be a necessary concomitant of its union. Sometimes no pain follows the operation. It should never be so severe as to keep the patient restless or prevent his sleeping, nor should it take on a rending, burning, or darting character. If it does, a subcutaneous injection of morphia is to be made on the temple. Should the pain, in spite of this, continue, the bandage is to be removed, and the lids bathed for a few minutes with a soft sponge dipped in cold water.

“The pain in the wound should begin to decrease after the third hour. Should it not do so, the same rules are to be observed.

“After the sixth hour there should be no continuous sensation in the eye that has been operated on. A slight pang, when the patient attempts to move his eye under the bandage, need not of course be regarded. If, however, there be a continuous sensation, the bandage should be changed; if this prove insufficient, a morphia injection is to be made. There are a good many people who, realizing the importance of an operation for cataract, expect as a natural consequence a certain amount of pain, and nerve themselves for its endurance. This idea should be summarily dispelled, and warning be given that any enduring sensation in the operated eye, whether it involve much or little pain, is an evidence that something is wrong, and its existence is at once to be made known. A second injection of morphia may be made if necessary, or, if the patient is full-blooded and his circulation excited, four to five ounces of blood may be taken from the arm.

“Too much stress cannot be laid on the importance of a good night's sleep following the operation. It is well to give the patient a dose of castor oil the day before, the effect of subsequent narcotics being thereby rendered more uniform as well as sure. The evening of the operation chloral may be administered, care being taken that a German preparation, by preference Liebreich's, be used. The best vehicle for its administration is the syrup of allspice, *syrupus pimentæ*. Graefe was in the habit of giving from forty-five to sixty grains at a dose in ordinary cases; while with people of intemperate habits he found at least seventy-five grains necessary. Should the first dose prove ineffectual, he would give to the former class fifteen, to the latter thirty grains more, four hours later. If injections of morphia had already been made to relieve local pain (from one-sixth to one-fifth of a grain in amount), with good effect except as far as inducing sleep was concerned, he would give ordinary patients thirty grains, drinkers from forty-five to sixty grains of chloral in addition.

"As a general rule, the reaction in the wound takes place between the twelfth and the twenty-fourth hour succeeding the operation, in the majority of cases between the fourteenth and eighteenth. If all is going on well, not the least pain should be experienced. But if, towards the end of the first night, or towards morning, any decided sensations are felt, they are to be carefully noted, inasmuch as this is the most critical moment. Though the hour for changing the bandage has not arrived, it should at once be removed, and the condition of the eye investigated. The wound itself need not be examined unless there is an increased secretion of tears, swelling of the lids, chemosis, or diminished lustre of the cornea. It will be sufficient to gently wash the lids, renew the bandage, and, in extreme cases, to inject a little morphia. If, after this, the pain persists, at least four ounces of blood are to be taken from the arm. If the lower layers of charpie are wet, if the upper lid is swollen, and if the fold of linen in immediate contact with the eye is covered with much secretion, suppuration of the wound is imminent, and active measures must be resorted to. The lids are to be carefully washed, and their cutaneous surface then brushed over with *lapis mitigatus* (a crayon of one part nitrate of silver and two parts saltpetre), washed immediately afterwards, first with salt and water, then with cold water, and thoroughly dried. The bandage is to be replaced in the *constrictive* form, which has already been referred to, four turns being taken over the eye, the second and third being drawn particularly tight. If the patient is tolerably plethoric, six ounces of blood are to be taken from the arm, and half an hour later an injection of morphia is to be made on the temple. Soon after the bleeding, a cathartic powder of calomel and rhubarb is to be administered; if in ten hours no dejection occurs, a dose of castor oil should be given. When the patient is not particularly strong, the venesection may be omitted, and only a small dose of calomel given.

"Such energetic measures as the foregoing have been severely criticized, and will in all probability be for some time condemned by a portion of the profession, who see in them a return to the errors of a past generation. Innovations on the established order of things are always sure of meeting with a resistance which thinks more of being energetic than reasonable, the adherents of which are largely drawn from the class of routine practitioners. Ask any one you hear objecting to and criticizing this treatment, whether he has ever tried it himself. And hear the words of a clear-headed, conscientious, and sincere observer. 'When these measures are taken in season, we often see, at the next change of the bandage (which, under such circumstances, should not be delayed more than six hours), an entire retrogression of the unfavourable symptoms, and the case resuming its normal course.'

"Suppuration of the wound is ordinarily ushered in by pain, but with some patients no such warning is given. This illustrates the importance of renewing the bandage at the time of the period of reaction, even if all seems to be going on right, as we may otherwise find that the favourable period for treatment has passed away. In such cases, Graefe lays special stress on the thorough canterization of the cutaneous surface of the lids, on the constrictive bandage and the cathartic powders. The morphia injection is to be omitted, if pain is wanting, while venesection is only to be resorted to when the patient is strong and has a full pulse. Bloodletting is, indeed, only to be advised during the short initial period, it being of no value when the suppurative process is fairly under way. As regards leeches, in cases of threatening suppuration, their application to the temple does positive harm. If placed behind the ear they are less dangerous, but annoy the patient considerably. The most potent remedies during this period of reaction are the canterizations and the constrictive bandage, which are to be renewed every six hours. In the case of patients whose health is much reduced, quinia should be given in addition, its administration being preceded by a cathartic.

"Anomalous symptoms during the subsequent treatment are apt to be dependent on partial suppuration of the wound, with its usual accompaniments. If gastric irritation be present, an emetic should be given on the second day, and the compressive bandage and canterizations of the lid continued. Warm fomentations are to be used between the applications of the bandage, but are

not to be left on for more than from quarter to half an hour at a time, and are entirely to be desisted from if their employment be attended by swelling. Graefe mentions 'that he was formerly in the habit of using these warm aromatic fomentations more freely, and still considered them of the utmost value in cases of transplanted iritis and the like.

"The food administered should vary in accordance with the strength and habits of the patient. His bill of fare should, on no pretext, include articles that are entirely novel or absolutely repugnant to him.

"The after-treatment should be largely based on the habits and circumstances of the individual, the principles that have been enunciated being those that are generally applicable. Neglect in following them lies at the door of many a failure.

"I have given you an almost literal summary of Graefe's views as regards the treatment after the operation for cataract, and will conclude in his exact words. 'I have simply insisted on the principles,' he says, 'which in general seem to me to best insure the success of the operation, and a neglect in following which may be made to explain many a disastrous case. Anxious vigilance need only be exerted for a few days. The fact that a human being's whole happiness depends on the result serves to whet our energies. And, after all, how infinitely shorter is the period of anxiety and care, than was the case with the old method! If twenty-four hours have passed away without any premonitory symptoms of suppuration of the wound having shown themselves, and if constant care be exercised, there is nothing more to fear. After three or four more days have elapsed without any untoward occurrence, we have merely to exert ordinary care and instil atropia, the application of which is not to be advised before the third day, unless cortical masses have been allowed to remain. If the conjunctiva stands it, and the patient has not an eye constantly kept on him, I keep the bandage on up to the end of the first week, for fear of injury. And the process of leaving it off must, instead of a sudden, be a very gradual one, the application being at first discontinued for only a few hours at a time. Even in the winter season, the most of my patients are discharged before the end of the second week.'"

Appended to the lecture is an analysis of sixty-one cases of extraction performed by the author by the peripheric linear section. Of these full details are furnished of only fifty-three, and in these we find—

"Failure	.	.	.	.	.	.	3
Partial success (vision	$\frac{1}{11}-\frac{1}{30}$)	.	.	.	.	.	6
Entire " ("	$\frac{2}{3}-\frac{1}{10}$)	.	.	.	.	.	44

"With eight additional unrecorded cases, all but one of which bid fair to come under the last head."

Of the three entire failures, one was due to suppuration of the cornea, one to intra-ocular hemorrhage, and one to panophthalmitis. In five cases iritis followed the operation, and in seven cases there were pupillary opacities, which necessitated a secondary operation.

ART. XXXIV.—*Population: Its Law of Increase.* By NATHAN ALLEN, M.D., Lowell, Mass. Read before the Western Social Science Association, in Chicago, November 12, 1868. 8vo. pp. 32. Lowell, Mass., 1870.

Physiological Laws of Human Increase. By NATHAN ALLEN, M.D. 8vo. pp. 27. From Transactions of American Medical Association, 1870. Philadelphia, 1870.

Physical Degeneracy. By NATHAN ALLEN, M.D. From the Journal of Psychological Medicine, October, 1870. 8vo. pp. 41. New York, 1870.

THE all-important inquiry into the laws which govern the increase or decrease of population, independently of immigration from neighbouring or remote communities, or from foreign lands, or of emigration to other places, is discussed in the publications before us, in an able and exhaustive manner. Dr. A. deals in no specious hypotheses, but simply in well-established facts.

The position assumed by him as the basis of his conclusions is in strict conformity with the recognized laws of human physiology, and accords with the teachings of all past history, and with events transpiring at the present time within the scope of our own observation.

The validity of the laws which govern the natural increase of population, as laid down by Dr. A., is well founded, and his deductions from them are sound and practical. If, in any city or State of our Union, there shall be found to be a marked falling off of the native population, not to be accounted for by emigration, but as the result solely of a diminution in the birth-rate, and an increased mortality among the diminished number of infants born, it will be found that such falling off is explicable only, or at least in major part, by a violation or disregard of the laws of population, adduced, illustrated, and defended in the publications before us.

The leading law upon which natural increase of population necessarily depends, is that both parties who enter into the marriage relation, but especially the female, shall have "a perfect development of all the vital organs, so that there shall be a perfect harmony in the performance of their respective functions." It being presumed that all other conditions are favourable, such as the age, union, and adaptiveness of the married parties, and provided further that no one of the natural laws of the organism is interfered with or violated. It is under this condition of things that there will be uniformly found not only that the greatest number of children will be born, but also that these will be endowed with the highest amount of vital energy, and of physical stamina, vigour, and strength.

The organs of the human body may be ranged into several groups. The *Nervous*, comprising the brain, spinal cord, and the several nerves of motion and of sensation—a predominance of this group constituting the *Nervous Temperament*. The second group, the *Circulatory*, comprises the heart, bloodvessels, and lungs; its predominance constituting the *Sanguineous Temperament*. The third, the *Nutritive* group, comprises the stomach, the intestines, the liver, the pancreas, and the absorbents and lymphatics generally; its predominance constitutes the *Lymphatic Temperament*. The remaining group, the *Motive*, comprises the muscles and their appendages; its predominance constituting the *Muscular Temperament*.

Now, as all the organs of the body are included in these groups, and as every organ, however apparently insignificant or obscure, has a specific work to perform in the vital economy, it is necessary that each and all of them should

have a full natural development, and perform fully and freely their appropriate functions—in no one excess, in no one deficiency. The relationship between the different groups of organs above described has been constantly varying in their relative development and activity in every age, and among all classes of people. “The causes of these changes,” remarks Dr. Allen, “originate partly within the body, and partly from external agencies and influences. They often change materially, and sometimes radically, in respect to the same individual, between the cradle and the grave.” Slight changes in the organization affect but slightly the physical or mental character, but when a certain group of organs becomes predominant, rendering one or other of the temperaments especially marked, the result is always attended by consequences more or less serious.

Let any single organ or group of organs be unduly exercised, and the excess of nutriment in consequence required for it or their support must necessarily be diverted from the organs which are allowed to remain in comparative repose. Let, in this way, any one of the temperaments become too predominant, and so continue through two or three successive generations, and the evil becomes intense.

“The bearing of this upon the law of increase may be best illustrated by dividing the human race into three great classes, and tracing out the history of their comparative increase. Let us first examine the class possessing organizations the most healthy, and best balanced, in which the temperaments are nearest equally represented. According to the theory here proposed, such a class, provided the laws of nature are not interfered with, will have the greatest number of children, combined with the highest degree of strength, vigour, and health. As representatives of this class, may be mentioned the early settlers of New England; also the better portion of the Irish race, whether living in Ireland or in America, together with a middling class of the German, Scotch, and English, either living in Europe or our own country. Sometimes, where any two of these races become united, we find a very rapid multiplication of numbers, as, for instance, among what are called the Scotch-Irish or Canadian French.”

In the newest settlements in this country, the birth-rate has been increasing; in other portions, especially the oldest, where there has been but little change in the population, it has decreased. It is very certain that, in whatever portion of our country, where the birth-rate is found to be the greatest, there will also be found a people possessed of a remarkably healthy, well-balanced physical organization. That wherever is met with a married couple having a large family of children, the parents will be invariably found to possess constitutions of good stamina, replete with health. In contrast to this class let us bring the extremes of organization, where we have, *first*, either the muscular, lymphatic, or sanguine temperament greatly predominant, and *second*, where there is a great preponderance of the nervous temperament. In the first of these extremes of organization, nutrition is mainly engaged in supporting the body of the individual, and the merely animal nature predominates. To such, few children are born. They are rarely met with in highly civilized communities, but abound among savage or barbarous people. It has always been remarked that excessively fleshy persons are seldom very prolific, and nowhere in history have we any account of a tribe or race leading a low, coarse, sensual life, that has been noted for fruitfulness throughout successive generations. Illustrations of this class may be found among some of the Indian tribes of North America, among the South Sea Islanders, and in certain portions of Africa.

The other extreme of organization, marked by a great predominance of the nervous temperament and deficiency in the muscular and nutritive tempera-

ments, is a very numerous class, and one rapidly increasing under our present type of civilization. The brain and nervous system are too much exercised, compared with the other groups of organs, and demand for their use an undue proportion of nutritive material. In this class are to be found those devoted to literary and scientific pursuits, and who have become distinguished as authors, philosophers, orators, statesmen, etc. "No facts in history are better known or established than that individuals celebrated for talent, genius, and mental attainments, and especially where both the married parties are thus distinguished, have few children; and such families in the course of two or three generations not unfrequently run out." The same thing is true in cases where no such distinction exists, provided that in both man and wife there is a great preponderance of the nervous temperament. Examples of this class could be abundantly cited from the history of nations most highly civilized, and individual illustrations of the same abound in every community.

Dr. A. adduces as the causes of the physical degeneracy of the female organization in New England—and the same causes are producing like effects in other of the older settled portions of our country—"1st. Neglect of exercise; 2d. Improper customs and fashions in dress; and 3d. The too exclusive cultivation of the brain. For the proper development of her muscular and nutritive systems the exercise of the female must be commenced early, when the body is in a state of growth." The girl must practise the lighter gymnastics of domestic labour, and be thoroughly and practically trained in all household duties. In this way she would obtain not only a good physical development, but a preparation for some of the most important duties of life, which can be acquired neither by the study of books, nor of accomplishments, nor the devotion to fashionable pursuits.

One of the reasons, Dr. A. remarks, for dwelling upon the defects in the organization of the female of to-day is because of the agency she exercises in shaping and moulding the physical systems of those who are to come after us. It is generally believed that, in accordance with hereditary laws, the vitality, the stamina, the strength of the constitution, depend much more upon the mother than the father. It becomes, then, vastly important that the mother should possess the right kind of organization. "One condition in these laws is, that all imperfect developments, marked weaknesses, or strong predisposition to disease, are transmitted in an intensified form, hence each successive generation will suffer, in these respects, far more than the preceding. And if these go on accumulating, what will be the condition of things as they approach a climax."

We cannot follow Dr. A. in his exposition of the several causes which, as riches and luxury, call our people away from the plain, active lives of their predecessors, cause a disturbance in the equilibrium of their organism, and a curtailment of its vitality. On these points, Dr. A., it is true, advances nothing absolutely new; he has, however, succeeded in deducing clearly, from the study of the hygienic laws of the human economy, the true sources upon which depend the natural increase or decrease of populations.

D. F. C.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Physiological Researches on the Excretion of Urea by the Kidneys.*—MM. Prevost and Dumas, Claude Bernard, Ricord, and other physiologists, maintain that urea after having been generated in the blood and tissues is simply excreted by the kidneys, while M. Hermann asserts that urea and uric acid are not only eliminated, but are formed by the renal tissue. M. GRÉHANT has undertaken a series of experiments, which occupied some years, to decide between these conflicting opinions. As a preliminary to this inquiry it was necessary to discover an accurate quantitative test of the amount of urea contained in any liquid; and the present essay of M. Gréhant is devoted to this subject. M. Millon's test for urea consists of a solution of nitrous acid, obtained by adding nitric acid to a globule of mercury in a test-tube. The metal is attacked, and the nitrous acid produced remains dissolved in the acid; this fluid decomposes urea into carbonic acid and nitrogen, and the amount of the former produced, as shown by the increase in weight of a solution of potash, gives the amount of urea present. This process has been much improved and rendered far more accurate by M. Gréhant, by collecting not only the carbonic acid, but the nitrogen, by means of an air-pump; and by a comparison of the volumes of each gas demonstrating that the urea alone has undergone decomposition. He has ascertained that a cubic centimetre of nitrogen and of carbonic acid at 0° C., at normal pressure, represents exactly 2.683 milligrammes of pure urea. In order to obtain the amount of urea in the blood, it is requisite to make an alcoholic extract of 25 grammes only, and to redissolve in water the product of the evaporation of this fluid. The results of his inquiries, pursued with the aid of this new method, show that, immediately after nephrotomy in the fasting dog, urea begins to accumulate in the blood, its increase being manifest within three hours after the operation; that the increase of weight of the urea in the blood and in the lymph, twenty-four hours after the ablation of the kidneys, is equal to the weight of it that would have been excreted by the healthy fasting animal in the same space of time; that the accumulation of urea in the blood, in the hours that succeed nephrotomy, follows the same march as after ligature of the ureters; that after ligature of one ureter the quantity of blood circulating through the kidney of the side tied diminishes; that, under normal conditions, the blood of the renal vein always contains less urea than the corresponding artery; that, in an animal in which the ureters have been ligatured, the renal venous blood obtained twenty-four hours after the operation contains as much urea as the renal arterial blood, so that the tissue of the kidney neither excretes nor secretes any more. Lastly, he shows that ligature of the ureters and nephrotomy are two operations that are identical in their re-

sults: they both suppress the eliminative function of the kidneys, whilst they form no obstacle to the formation of urea, which takes place *outside* these organs.—*Archives de Physiologie Normale et Pathologique*, Sept. and Nov. 1870.

2. *On the Significance of the Liver-fat, and of the Fatty Liver for the Healthy and Diseased Body.* By Dr. OSWALD NAUMANN.—The author of this paper has already pointed out in another place that the fat obtained from the liver is much more readily absorbed by the skin than other fat; it is as much as from four to seven times more readily absorbed. The liver-fat is further much more easily assimilated by the intestines, and also very much more oxidizable. These facts are intimately connected with the long-established therapeutic value of liver oil. In the present paper he lays down as a fundamental proposition, that in all the cases which he has examined the fat from the liver was much easier oxidized than that from other parts of the body, as the heart, the kidney, and the subcutaneous adipose tissue; and with this view he has examined the liver of fishes, pigs, ducks, the fatty liver after phosphorus-poisoning, the fatty liver in tuberculosis, and the pathological fatty liver in ducks. His method of testing the degree of oxidizability was by shaking the oil obtained in a test-tube, with a dilute solution of permanganate of potash, the degree of the decolorization of the fluid indicating the degree of oxidization. From the universality of this fact, the author deduces that one great function of the liver is to prepare for the organism an easily assimilable—that is to say, an easily oxidizable—fat; and that it does this chiefly by producing some unknown alteration of ordinary fat, but may also in part produce fat from albuminous principles. Taking another view of the question, the deduction is confirmed by the fact that, as a general rule, in the various classes of animals, the size and activity of the liver, but especially its proportion of fat, is in inverse proportion to the perfection of the function of respiration. Thus, in fishes the liver is unusually large; in birds proportionally very small. Then, again, the liver is formed very early in the embryo, and all through foetal life the greater part of the blood passing into the fœtus passes through the liver before entering the general circulation, whereas, after birth, when the respiratory organs come into action, the absorbed fat passes in the form of chyle through the ductus thoracicus into the circulation without being first sent through the liver. The liver in fishes and amphibiae, as well as in the embryo of higher animals, is therefore to be looked on as to some extent an accessory organ to the organs of respiration. And now in respect to the pathological fatty liver. It has been already stated that in it the fat presents the same peculiarity as in the normal liver, and the author regards the change as rather a physiological than a pathological one. The object of the increase in size and in the production of fat in the liver is to supply to the diseased organism readily assimilable fat, so that the large fatty liver has for the patient a similar significance as the normal liver has for the sound person. In the case of phthisis pulmonalis, which gives us the most frequent examples of fatty liver, it is easy to understand how the large fatty liver should act as in fishes and the fœtus, as an accessory organ to the partially disabled lungs. But in the other class of cases where the lungs are not affected, but where, as in chronic emaciating diseases, the activity of the functions in general is diminished, it is easy to understand how a supply of easily oxidizable matter would be a great desideratum to the weakened organism. The fact is thus explained how it happens that in the case of fatty liver the subcutaneous adipose tissue is generally deficient, the cause being that the fat is absorbed, but cannot be used till modified by the liver, which organ at a given time contains a large amount undergoing this process of modification. There is only one exception to this view, that, namely, of the fatty liver of the drunkard, where the fat is stored up in the liver, its place being in great part taken up by the easily oxidizable alcohols. In all the other cases the fatty liver is not a depot for the fat of the body, as it has been generally considered, but an active agent modifying the fat which it contains.—*Glasgow Medical Journal*, August, 1871, from *Reichert and Du Bois-Reymond's Archiv f. Anat. Phys.*, &c., No. 1, 1871.

3. *Elimination of Nitrogen from the Human Body.*—In commenting on Dr. PARKES'S Croonian Lectures, the editor of the *Lancet* (May 20, 1871) remarks: "It seems well made out that, practically, all the elimination of nitrogen that takes place does so through two channels—those of the kidneys and of the bowels. The skin and the breath may be disregarded as channels for the elimination of nitrogen. Of the two modes of exit of nitrogen, by far the most important is the urine. Thus Ranke, with whose experiments Dr. Parkes's very closely agree, found, on experimenting on himself, that, with a mean entry of 17.91 grammes (176 grains) of nitrogen, 1.7 gramme (or 26.23 grains) passed by the bowels, and 18.2 grammes (or 281 grains) by the kidneys. In other words, on a regulated diet, more than the amount of nitrogen taken in the food can be recovered from the urine and feces. On a regulated diet there is a slight excess of nitrogen in the excreta over that of the food taken; which Dr. Parkes explains by saying that, on such a diet, there is a tendency to lose weight—a fact which would seem to carry the moral that we should not regulate ourselves by nice calculations in such matters, but eat according to well-ordered appetite.

"The point of the experiments of Parkes, as of Voit, Ranke, and others, is this—that the amount of nitrogen eliminated in health from the body, in the form of urea and other substances, is regulated by food, if not entirely, at any rate almost entirely. If the food taken is more nitrogenous, the excretion of nitrogen increases almost in exact proportion, and *vice versa*. Exercise, mental or bodily, is comparatively unimportant in its effect. 'Within certain limits, the exit of nitrogen in healthy adults is governed by the entrance;' in other words, the amount which passes out by the urine is regulated by that which passes in, and to a very small extent only by the muscular and nervous actions of the body itself. We have been in the habit of thinking that *work*, mental or bodily, was the great cause of variation in the amount of nitrogenous substances excreted; but exacter physiology seems to show that food, rather than work, determines the elimination. This, of course within certain limits. Some urea is found in the urine even in cases of starvation, and in cases where nitrogen is withheld from the diet.

"Every practitioner will immediately recognize the practical importance of exact knowledge on this subject. In regard to pyrexia, to cases of cancer and other organic growth, to gout, to diabetes, saccharine and ureal, most important illustrations and suggestions have already been received from physiological chemistry; and it cannot be doubted that much more light will yet be thrown on these states. To take only one illustration given by Dr. Parkes—that of the state of pyrexia. We all know the high temperature of acute pneumonia, and the rapidity with which a patient loses weight and strength. Exact observations in physiological chemistry have given some explanation of these phenomena. 'Thus in a severe case of pneumonia the amounts of nitrogen going in and passing out were determined, and the degree of pneumonic consolidation estimated closely. From these data it was calculated that in five days 21 per cent. of the muscular tissue was destroyed; and, as this is supposed to constitute usually 45 per cent. of the whole body, it follows that more than 9 per cent., or one-eleventh part of the whole body, was destroyed and discharged in five days.' This piece of chemistry greatly enlarges our notions of the state of acute pneumonia, though we are still far from understanding the exact course of pathological events and processes. In what part of the system does the first step to acute pneumonia occur, leading not only to local consolidation, but to most extensive tissue change throughout the body? What is the relation of this tissue change to the local lesion of the lung and to the high temperature, and to more impalpable and recondite changes such as those indicated by the initiatory rigor, &c.? These are questions which still cannot be fully answered; enough seems known to connect the state of pyrexia, with its great ureal elimination while little food is being taken, with the rapid disintegration of nitrogenous tissues, especially muscles and nerves. In health, when food is being naturally taken and the weight of the body is preserved, there is an almost perfect quantitative correspondence between the entrance of nitrogen in food and its elimination. But in pyrexial disease, and to some extent per-

haps in diseases that are not pyrexial, there occurs a great disproportion between the nitrogen taken in food and the nitrogen eliminated. Physiology and chemistry unite to show that this elimination takes place chiefly at the cost of the muscular and nervous tissues—or perhaps it would be more accurate to say at the expense of the muscular tissue when it has lost some nervous quality necessary to the preservation of its integrity.

“A most interesting part of this question still remains to be considered. We have said that all recent physiology tends to show that in health the increased action of muscles causes either no increase in the amount of urea eliminated or only a very slight increase. Moreover, urea is not found in muscles, as it would almost certainly be if it were formed in them. Where, then, is urea formed, if not in muscles? We will content ourselves with referring our readers to the proofs so ably and interestingly stated by Dr. Parkes, that the transformation of albumen into urea takes place in the cells of the glandular system, especially in the liver. We have more than once directed the attention of our readers to the discovery that urea is formed in the liver. Meissner's discovery has been confirmed by others. E. Cyon has shown that blood leaving the liver has much more urea in it than when it enters. Pathology, too, has given proof of the urea-forming function of the liver, by showing that withering and destruction of the liver-tissue is connected with an important diminution in the formation of urea. It is evident that, though our notions of the functions of the liver have been already greatly revolutionized by physiology, this organ must be regarded more than ever in our attempts to explain and treat disease. The vague but common states of biliousness, as well as of those graver forms of liver disease in which the patient dies comatose as if from uræmia, may receive elucidation from the discovery of the urea-forming function of the liver. These states may be connected with an excess of nitrogenous food which cannot be transformed into urea, and so loading and oppressing the system; or they may be induced by substances which chemically or physiologically interfere with the urea-forming function of the liver and other glands. At any rate, medical men must feel indebted to physiologists for disclosing the great fact, that the production of urea takes place certainly in the liver, and probably in other gastro-intestinal glands; and that the amount of it can be greatly controlled by having respect to the nature of the food given. Most physicians will agree with Dr. Parkes in thinking that these discoveries in physiology dictate the necessity of a reconsideration of the dietetic doctrines which have lately been prevalent in the profession, and especially that of the value of large quantities of nitrogenous food, either in pyrexial states or in states where the disposing and transforming power of the system or of its glands is temporarily in abeyance. ‘I believe from experience,’ says Dr. Parkes, ‘though speaking with great reserve, that the almost exclusively animal diet sometimes given in fevers is not so useful in sustaining strength as is supposed; and that, if it were not for the loss of appetite which limits the supply, we should perceive more clearly the bad effects.’ Dr. Parkes thinks that in fevers starches and fat should be used more freely.”

4. *Function of the Spleen.*—Dr. MOSLER, in association with Dr. SCHINDELER, has been engaged in a series of experiments with the view of testing, if possible, the function of the spleen. The results of these experiments will shortly appear in a monograph on “The Pathology and Therapeutics of Leukæmia;” Dr. M. has, however, considered it advisable to make public, in anticipation of the appearance of the monograph, the results of thirty experiments in which ablation of the spleen was practised. This has been done in the *Centralblatt f. d. Med. Wissenschaften*, for May 13, 1871, No. 19. The results of the experiments are as follows:—

1. The existence of the spleen is nowise essential to the life of the animal.
2. After extirpation or artificially produced atrophy of the spleen the functions of the remaining lymphatic organs are increased in activity. The medulla of the bones, in the cases of the ablation of the spleen, is observed for a long time after to have undergone a remarkable change resembling leukemia (*Neumieum*). A hyperplastic condition of the lymph-glands is not always observed.
3. The vicarious activity of these glands, which would appear to be connected

with many external conditions, is in animals deprived of their spleen, not always complete, as, especially in the first months subsequent to the extirpation or the artificially induced atrophy of the spleen, an abnormal alteration in the blood can be detected, from which circumstance it is to be inferred that the spleen is directly concerned in the process of hæmatosis. By the experiments of Dr. M. it would appear that this influence of the spleen is exercised in the development as well of the white as of the red corpuscles.

4. On the stomacic and pancreatic digestions the removal of the spleen exercises no influence; besides the proof of this derived from chemical analysis, we have the further evidence that in animals deprived of their spleen loss of appetite is a very uncommon occurrence. D. F. C.

5. *Absence of the Spleen in a New-born Infant.*—Dr. BIRCH-HIRSCHFELD relates an example of this congenital defect in an apparently well-formed and normally developed infant that died within a few hours after birth. The post-mortem exhibited within the cavities of the cranium and thorax no apparent deviation from the normal condition. In the abdominal cavity the first thing that attracted attention was the enormous size and unusual position of the liver; it filled to an equal extent the left as well as the right hypochondrium; it was of great weight (208 grms.). The left and right lobes were in circumference and conformation entirely symmetrical. On the other hand, not a trace was left of the spleen, or even of one of the splenic arteries or veins. The gall-bladder and ducts, hepatic arteries and veins, showed their normal proportions, while the portal vessels, by their uncommon calibre, bore a near relation to the increased volume of the liver. By a microscopical examination of their tissues there was found to be absent the disproportionate wide spread of the portal ramifications. The acini were filled with blood-corpuscles. The remaining abdominal organs were in their normal position and unaltered.—*Centralblatt f. d. Med. Wissenschaften*, June, 1871, No. 24. D. F. C.

6. *Origin of Life.*—At the recent meeting of the British Medical Association for the Advancement of Science, Dr. CHARLTON BASTIAN described some new experiments he had made in relation to the origin of life, and said that the result of these led him to the conclusion that living matter might arise *de novo*, and that this living matter might go on to the development of certain common organic forms, just as surely as any speck of crystalline matter in a fluid might take on and assume certain definite characters which belonged to that saline substance in its crystalline condition. His experiments showed that living organisms had been found in fluids exposed to a temperature higher than was sufficient to destroy germs.—*British Med. Journal*, August 19, 1871.

7. *Spontaneous Generation.*—Dr. FERRIER gave an account, at the recent meeting of the British Association for the Advancement of Science, of certain experiments made by him in conjunction with Dr. Burdon Sanderson, with a view to discover the circumstances which determine the existence of bacteria in the liquids and tissues of the body. The paper had reference to certain results obtained in the course of an investigation into the ultimate nature of contagion. It was shown that in the test liquids which they used for the detection of organisms in contagious fluids, no spontaneous evolution of organisms takes place. The occurrence of organisms in these liquids was in proportion to the degree of external contamination. Fungi (*penicillium*) is the chief form which is derived from the air. The occurrence of bacteria is, however, due to water. It was shown that every kind of water, with the exception of freshly distilled water, teems with invisible germs of bacteria. These cannot be detected by the microscope, or by the electric beam in the manner adopted by Professor Tyndall. The purest-looking ice-water was found to contain as many germs as others which had not the same apparent purity. Different varieties of water possess the zymotic power, as they term it, in different degrees. The water supplied by the London water-companies was examined, and different degrees of bacteria impurity were found to exist. They further showed that the animal liquids and tissues do not, in the normal state, contain the germs of bacteria.

and that the occurrence of these, and consequent putrefaction, was due to contact with surfaces or ordinary water. Bacteria seemed to be the pioneers, if not the producers, of putrefaction. It was found that milk, meat, wine, etc. do not putrefy if they are kept from contamination with water, or any surface which has been superheated, or rendered innocuous by some anti-zymotic which is fatal to the life of bacteria. The experiments further showed that there is no developmental connection between bacteria and torula—consequently Hallier's theories fall to the ground.—*British Med. Journal*, August 19, 1871.

8. *On the Uses of the Uvula.*—Sir DUNCAN GIBB read a paper before the Section of Anatomy and Physiology of the British Association for the Advancement of Science at its recent meeting on this subject. Anatomists describe the action of the uvular muscle as an elevator which shortens the uvula. It is, however, a sentinel to the fauces, especially in the act of deglutition; for when any substance comes into contact with it, it excites the action of all the neighbouring muscles until it is got rid of. It possesses a function of not less importance, in holding the soft palate tense and firm in the medial line against the wall of the pharynx during the act of deglutition itself, and thus prevents the passage upwards of fluid or solid substances behind the nose. This was supported by experiments upon a person who had lost the bones of the nose, permitting of a view of the action of the soft palate from its nasal aspect during deglutition with or without food. Under either circumstance, a double arch was seen in the form of two convex swellings, held in a state of firm tension by the action of the uvula passing down the centre of the soft palate, with its end resting flat against the wall of the pharynx. The tension ceased the moment that the constrictors of the pharynx had fully exerted their influence over the substances swallowed. Whilst the uvula has its special uses in the act of deglutition, it exerts a not less decisive influence upon the voice when uttered in a very loud tone, or in singing the higher registers, in both sexes. Then its character as a levator or shortener is exerted. If this power is impaired by removal of the muscular (not the membranous) end, then the singing powers are damaged. The elongation of the uvula and its effects formed a subject of observation, a distinction being made between its elongated membranous end and the true muscular end. Speech, the author said, was modulated by the soft palate and uvula, and the motor power of the latter is unquestionably exerted in pronouncing the letters K, Q, and X, with their associations, more especially the gutturals of the various languages.—*Med. Times and Gaz.*, Aug 12, 1871.

9. *Fermentation and Disinfection.*—Prof. HOPPE-SEYLER, along with Dr. N. ZAPOLSKY, has recently made a most important contribution to our knowledge of the processes of putrefaction and disinfection (*Med.-Chem. Unters.*, 1871, pp. 557-581). His experiments have a very significant bearing on Pasteur's researches. Hoppe-Seyler suggested to Zapolsky that the latter should first investigate the action of carbolic acid on albuminous matters and on ferments. This was done, and it was found that the acid precipitates albuminous liquids only when these are neutral, or nearly so, and the acid is in almost saturated aqueous solution. The action of carbolic acid on ferments was most remarkable, for it was ascertained that neither the formation of hydrocyanic acid from the fermentation of bitter almonds, nor the generation of oil of mustard, nor the conversion of starch into dextrine and sugar by diastase or saliva, is prevented by carbolic acid. The solution of fibrin by the gastric juice was indeed prevented by the acid, but not till a considerable quantity had been added.

At this point Hoppe-Seyler himself took up the research. His remarks, no less than his experiments, are of a highly instructive nature. He first states that the ferments operated upon by Zapolsky were entirely such as are formed of chemical insoluble substances. Liebig's altered views on fermentation, putrefaction, and eremacausis are next criticized, and Pasteur's assumption that because living organisms are invariably present in putrefying and fermenting fluids, therefore those organisms are necessary to, and the cause of, the changes going on, is controverted. It is true, he says, that the organisms may contain

the ferment, but it is not the less necessary to separate the ferment from the organism in order to form a correct estimate of the questions at issue. No clear line is drawn between fermentation and putrefaction.

In Hoppe-Seyler's experiments, the serum of pus, filtered and perfectly clear, and hydrocele fluid, were treated in various ways, some of the experimental tubes being hermetically sealed with almost entire exclusion of air, others being loosely corked; and they were exposed to varying temperatures up to 58° for various periods of time. The results show that the fluids underwent putrefaction, whether living organisms were present or not, and that these exercised apparently no influence on the rapidity of the process, but that this was solely dependent on temperature. Two similar fluids were kept, the one loosely corked at a temperature of 68° F., the other in an hermetically sealed tube at 108° , for equal lengths of time. At the end of the experiment the former, which swarmed with monads and vibrios, had undergone much less putrefaction than the latter, in which no signs of life or organization could be detected.

The action of carbolic acid on the lower organisms and on ferments was demonstrated to be analogous to that of heat. If a putrefying albuminous solution be gradually heated, first the organisms therein perish, then at a more elevated temperature the ferment is altered so as no longer to act as a ferment. So, on adding carbolic acid to a similar solution, all life ceases when $1\frac{1}{2}$ per cent. of acid has been added, whilst the putrefaction of albumen will proceed, though slowly, with as much as 1 per cent. of the disinfectant. Commencing coagulation of the albumen appears to set a limit to the splitting up of this substance under the action of a ferment.

Incidentally it was found that cholesterine disappears in putrefying solutions, so that this substance can no longer be regarded as a product of the splitting up of albumen by fermentative changes; it is more probable that it is a product of oxidation.

Whilst it is thought to be proved for some ferments, and asserted of others, that living organisms are not indispensable to their commencement and continuance, it is not pretended that these processes do not stand in a definitive relation to the lower organisms; the ferment cannot be renewed without the organism.

An elaborate theory, supported by experiments, is next advanced as to the source whence such organisms as live in fermenting liquids with entire exclusion of oxygen, derive the force necessary for their growth and the decomposition of the fermenting substances, and this is thought to be derived from the heat set free by the splitting up of complex into simpler substances.

Hoppe-Seyler's observations on the use of disinfectants are most important. He points out that his researches show how necessary it is not only to destroy the products of putrefaction and fermentation—for the destruction of such ill-smelling gases as sulphuretted hydrogen and ammonia can have no more real influence on the fermentative changes involved in cholera, typhus, &c., than the removal of carbonic acid can have upon the progress of alcoholic fermentation—but also to go beyond even the destruction of the living organisms, and attack the ferment, which, as has been pointed out, is much more resistant than the organisms. Disinfectants, he thinks, act by forming precipitates with ferments, but it is not proved that these may not resume their activity under altered conditions. Of all aerial disinfectants he thinks sulphurous acid gas, from burning sulphur, the best. One or two per cent. of the gas in a room will entirely prevent or stop the growth of the lower organisms. This quantity is obtained by burning half a drachm or a drachm respectively of sulphur for each 100 cubic feet of space to be disinfected.—*Lancet*, Aug. 26, 1871.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

10. *Physiological Effects of Anæsthetics.*—M. Claude Bernard concluded from his experiments that there is a *transmission by nervous influence* from the cerebral centre to the spinal centre, and from thence to the periphery, but that this influence could not travel in the inverse direction. In other terms, the brain being anæsthetized, the animal is affected in every part without the diffusion of poisoned blood into the posterior half of the body; but if the spinal centre receives the poison, without the brain being affected, anæsthesia is produced in the parts dependent on the poisoned portion of the cord, but not in the brain. This is an important question.

Dr. J. L. PREVOST, of Geneva, observes that if the anæsthetic agent can, merely by affecting the brain, also anæsthetize, secondarily, the spinal cord and the general sensibility, we must assume the existence in the brain of cells whose function is to paralyze the spinal cord. These cells would form centres capable of being excited by the anæsthetic, and then paralyzing, secondarily, the sensory cells of the spinal cord which are in connection with the sensitive nerves. These centres for paralyzing sensibility would thus be analogous to the auditory centres and nerves, which play such a curious and important rôle in relation to certain movements, and especially to the movements of the heart.

Dr. Prevost relates (*The Practitioner*, July, 1871) some experiments made by him to determine this point, and from them he is led to believe that chloroform, in order to anæsthetize the nervous centres, must reach these centres, and that it only anæsthetizes the part with which it is in actual contact, whether in the case of the brain or in that of the spinal cord.

11. *Organic Bromides.*—Dr. B. W. RICHARDSON, in an interesting paper (*The Practitioner*, June, 1871), states that the success that has attended the administration of some of the inorganic bromides, the potassium bromide especially, has led him to prescribe organic bromides. "The physiological action of bromine itself, the element, is," he says, "definite and well pronounced. In the old parlance it is an irritant, but the term does not strictly indicate all that it effects. To a certain extent a volatile body, it produces, when it is inhaled, a peculiar constricting action in the vessels which supply the secreting surfaces with their blood, so that inhalation of its diluted vapour makes the mucous surfaces with which it comes into contact dry and painful. After a time there is what may be called a reaction, due probably to temporary paralysis of the vessels, and then there follows a free excretion of fluid, what the older writers would designate a flux or salivation, attended with some degree of local insensibility.

"Applied directly, in the liquid form, to the body, and especially to a mucous surface, it acts as a direct destructive of tissue, not precisely as a caustic, but as a substance which leads to shrinking and slow death, with still more determinate local insensibility.

"In combination with other elements, as with potassium, its direct action is modified, but not removed. Passing through the tissues in a condition of fine distribution, and probably separating from its ally, it exerts on the nervous matter its special sedative influence, causing, if it be carried far enough, its direct paralyzing influence over the vessels which govern secretion, and leading to a certain extent to decreased sensibility of the nerves which govern common sensibility.

"On the whole, bromine may be considered as a medicine which acts primarily on the sympathetic or organic system of the nervous system, and as a modifier of vascular tension; and this, whether it be applied locally and directly, or generally and indirectly—*i. e.*, in combination.

"Thus we may rationally administer bromine with any other substance with which it will enter into chemical form of combination; we may trust to the development of its due independent action, without regard to the action of the

substance with which it may be combined, and we may be satisfied that it will not materially interfere with the action of the agent with which it has been made to combine."

The organic bromides which Dr. R. has employed are the bromide of quinia, the bromide of morphia, and the bromide of strychnia, and sometimes he combines two and even all three of them, to such particular cases. Speaking generally of all these salts, he says that in action, the bromide throughout, in so far as its action is indicated, is eliminative and sedative. "I am satisfied," he adds, "the bromide of quinia can be administered freely, when quinia itself, or other salts of it, cannot be readily tolerated. I am equally clear that the bromide favours the sedative action of morphia, while it at the same time allays the astringency which morphia induces; and lastly, I am satisfied from experiment that bromide reduces, or rather subdues and prolongs, the action of strychnia on muscular motion.

12. *Physiological Action of Organic Compounds.*—In an interesting report on these compounds, read before the Section of Anatomy and Physiology of the British Association for the Advancement of Science at its recent meeting, Dr. RICHARDSON commenced with *Chloral Hydrate*, treating of four points in relation to it: (a) The question of a dangerous and of a fatal dose. (b) The quantity of hydrate that can safely be given in limited periods of time. (c) The treatment to be adopted in cases of poisoning by the hydrate. (d) The chronic evils from indulgence in the substance as a narcotic luxury. Respecting the treatment of persons under poisonous doses of chloral the author discussed three lines of treatment as all important—viz., sustainment of the animal temperature in a warm air; sustainment of the body by the administration of food; and artificial respiration. On the subject of habitual use of the hydrate he spoke very strongly, urging that to the vices of alcoholism and opium-eating there was now being added that of using chloral hydrate as a narcotic. He described the dangers of this growing practice, and, in terms which were received with the most earnest demonstrations of acquiescence on the part of the audience protested that chloral hydrate was purely a medicine, and that when it was employed in the absence of medical science and experience it ceased to be a boon, and became a curse to mankind.

Anhydrous Chloral was the next substance described. This is the fluid from which chloral hydrate is made by the addition of water. It is a fluid yielding a very irritating vapour, but it can be applied freely to the skin, where, without pain, it acts rapidly, taking up water and becoming transformed as it is absorbed into chloral hydrate. It causes, nevertheless, some loss of structure at the part to which it is applied, and some after-narcotism from the absorption of the hydrate. It will prove of great service in neuralgia, in the local treatment of cancer, and in other external forms of disease.

Metachloral was next introduced. It is a fine white powdery substance, insoluble in water, and made by the action of sulphuric acid on anhydrous chloral. Administered internally it is a narcotic like chloral hydrate, but it is slower in its action and less active.

Some new researches on *Nitrite of Amyl* were next adduced, in which the action of that substance on the circulation of the lungs was defined. It was shown that the vascular paralysis caused by the nitrite extends to the vessels of the pulmonary tract, and that the extremest congestions and hemorrhages can be induced by it in the inferior animals, representing states closely resembling some conditions running, at least, side by side with tuberculous deposit. It was also explained that in some animals affected with scaly disease of the skin and loss of fur the continued inhalation of the nitrite vapour induced a free capillary circulation and effected a rapid cure.

Nitrate of Ethyl and *Nitrate of Amyl* were taken up in continuation, and a comparison was made between the action they produced and the action of the respective nitrites, the differences being due to the additional equivalent of oxygen in the nitrates.

The action of *Sulpho-urea*, a new organic compound, in which sulphur represents the oxygen of common urea, was brought under notice after the discus-

sion of the nitrates; and, finally, hydramyle and chlor-hydramyle were considered at length in respect to their uses and applications as rapidly acting narcotic vapours. In a second part of the report Dr. Richardson treated on three topics: The condition of the minute circulation under the action of narcotics; the relation of convulsive action to the contraction of the minute blood-vessels; and the effect of condensation of the water of the tissues and its fatal accumulation on the skin and the mucous and serous surfaces—the bronchial surfaces especially—during states of the body when the animal temperature is undergoing decrease.—*Medical Times and Gazette*, Aug. 12, 1871.

13. *Experimental Notes on the Action of Aloin*.—Dr. McKENDRICK communicated to the Medico-Chirurgical Society of Edinburgh an account of a number of experiments performed by him with the view of determining whether or not aloin was a purgative. Aloin has been used in medicine for about twenty years, but some physicians have found it active, while others supposed it to be almost inert, and to have no special advantages. Dr. McKendrick had performed thirty-two experiments—seven on pigeons, ten on rabbits, four on cats, four on dogs, and seven on the healthy human subject. The method adopted in the investigation was to (1) weigh the individual; (2) weigh the quantity of food allowed in twenty-four hours; (3) weigh the feces passed in twenty-four hours, and take the average for three days; (4) give the drug, and weigh the feces passed during twenty-four hours after administering it; and (5) tabulate the results. The results arrived at were: 1. That aloin is a purgative. 2. That aloin not only alters the character of the feces, rendering them softer and more mucous, but increases the amount. 3. That aloin has little or no effect on pigeons and rabbits, except in doses of 3 or 4 grains. 4. That aloin has a powerful effect on cats in doses of from 1 to 3 grains. 5. That aloin purges dogs slightly in doses of from $\frac{1}{2}$ grain to 3 grains. 6. That aloin acts as a purgative on man in doses of from $\frac{1}{2}$ to 3 grains; this observation confirming those of Mr. Thomas Smith and others.

The drug was given in various ways, by rectum, introduced into the stomach, and subcutaneously injected. Dr. McKendrick offered no theory as to its mode of action, and reserved for further communication or communications the consideration of various questions connected with the use of aloes and aloin.—*Edinburgh Medical Journal*, June, 1871.

14. *Therapeutic Actions and Uses of Turpentine*.—Dr. WARBURTON BEGBIE read a paper on this subject before the Medico-Chirurgical Society of Edinburgh. He gave a brief sketch of the ancient history of the drug from the time of Hippocrates, with a notice of the various forms in which the oleo-resins of the coniferae are used or have been used in therapeutics. Oil of turpentine was described as being irritant and stimulant, quickening the circulation and augmenting the temperature of the body. In larger doses it produces a sort of intoxication; in drachm doses it is hypnotic. Externally it is a valuable rubefacient, and is absorbed by the skin so as very soon to be recognized in the breath, and by its characteristic violaceous odour in the urine. The production of this violaceous odour in its perfection seems to be a test of the integrity of the urinary organs, as it is less marked or absent in disease of the kidneys. The therapeutic actions and use of turpentine are various. 1. As a cathartic it is uncertain, but along with castor oil it is useful in cases of obstinate obstruction and tympanitis. 2. As an anthelmintic it is chiefly used as a cure for tapeworm; also, in the form of enema it destroys ascarides and lumbrici. 3. Though turpentine sometimes causes hæmaturia, it cures certain passive hemorrhages. It is useful in purpura, probably acting through the nervous system; and is useful also in hæmoptysis, hæmaturia, and uterine hemorrhages. 4. As a stimulant, it is especially valuable in adynamic fevers; as in the stupor of typhus, in certain kinds of delirium, and in the later stages of enteric fever with a dry tongue. 5. In certain nervous diseases, such as epilepsy and chorea, it is said to be very useful; but in epilepsy it is supplanted by bromide of potassium, and in chorea by arsenic. In certain forms of sciatica and crural or brachial neuralgia in the aged, twenty-minim doses thrice daily have a very good

effect. In the nervous headache of delicate females, and the headache which is induced by fatigue, it is a better stimulant even than strong tea, and without the effect which tea so often has of banishing sleep. 6. In all chronic discharges from mucous membranes, such as chronic and fetid bronchitis, it is very useful, and even is advantageous in gangrene of the lung in checking the fetor. Under this head some interesting cases were given of gangrene of lung depending on the presence of foreign bodies.—*British Medical Journal*, Sept. 2, 1871.

15. *Hypodermic Injection of Morphia*.—MR. J. P. SLEIGHTHOLME gives (*The Practitioner*, July, 1871) the results of his experience with this mode of medication derived from two thousand injections of morphia while house physician to the Manchester Royal Infirmary. He says that with one exception, he never saw any immediate ill-effects from it, and only in one case, any great evil result from its prolonged use. He seldom found it necessary to increase the dose beyond one-fourth of a grain. In conclusion, he says, "that when hypodermic injections of morphia were used with the intention of relieving pain, they almost invariably succeeded in doing so, no matter how severe the pain might be; that when sleep was prevented by severe pain, the pain was relieved and sleep generally followed; but that when sleeplessness depended upon or was accompanied by great excitement or delirium—as in mania, delirium tremens, acute chorea, &c.—the injections not only frequently failed to produce sleep, but were often followed by increased excitement and delirium."

16. *Cow's Milk Koumiss*.—DR. VICTOR JAGIELSKI read before the British Medical Association at its recent meeting a paper on this subject. He said, that koumiss is a pure animal milk in a state of fermentation. In its composition it combines all the requirements for a wholesome nutrition of the human body; while certain products of the fermentation add to it important therapeutic properties. All animal milks are convertible into koumiss, and the general qualitative composition of the products is the same for all. In all, the act of fermentation sets free the casein, albumen, and butter in a highly attenuated form, and develops alcohol and carbonic and lactic acids, together, according to Morfit, with certain fragrant volatile compounds. Once started, it continues until all the lactose of the milk has been transformed, and this transmutation is more rapid in proportion to the rise in the temperature of the air. Dr. Jagielski distinguishes the three gradations thus formed, according to their respective physiological effects; but though each may have a specific application, the general properties are retained by all. No. 1. This is the freshly made koumiss, with the minimum of the products of fermentation. In three to five days it becomes—No. 2, which is more acidulous than sweet, and so sparkling that it requires to be drawn from the bottle through a tap. In ten to fifteen days it has changed into No. 3, when the fermentation is more developed than in No. 2, and extends to the maximum with time. Consequently the taste is acid, and the koumiss rushes through the tap as a rich, creamy, foaming liquor. After quoting many distinguished European and American authorities in its favour, the author noted some of the favourable results of his own professional experience with the use of koumiss in cases of constipation, impaired digestion, debility, chronic bronchitis, consumption, diarrhoea, in the adynamic stage of febrile diseases, after confinements, operations, in diabetes, &c. In conclusion he urged a thorough trial of it in both hospital and private practice, believing that, though it is not a specific for any disease, it merits the most serious consideration as a most benign medicinal agent.—*Lancet*, August 19, 1871.

17. *Koussin*.—Prof. ZEIDESDORF stated at the meeting of the Royal K. K. Society of Medicine of Vienna (June 16th), that the examination of the flowers of *Brayera anthelmintica* by many chemists—Wittstein, Pavesi, and Bedall—shows that the active principle is a bitter, which Pavesi described as Koussin or Tenin. Bedall, apothecary in Munich, shows that genuine Koussin is light yellow in colour, with a scent like leather, hardly soluble in water, but will dissolve in alcohol or pure alkalis. Koussin is taken in doses of two scruples,

divided into two powders, and swallowed with an hour of interval: it requires no preparation, and leaves behind it no bad consequences. Three or four hours after taking it there follows a diarrhoea-like motion, with which the tape-worm passes away. Dr. Diatrich has made numerous experiments with this remedy, and has published these, and Dr. Zeidesdorf has lately verified the experiments, in the case of a shopkeeper, N. N., recently taken into hospital for insanity, who had for a long period suffered from tape-worm. On the 15th of May, two hours after breakfast, at 9 A.M., a scruple, and at ten a scruple of Koussin was administered. At one P.M. a worm 17 metres long, came away (*Bothrioccephalus latus*) with the head.—*The Doctor*, Aug. 1, 1871.

18. *The Chemistry of Tea*.—The May number of Liebig's *Annalen* contains a paper by ZÖLLER, on Tea, from which we abstract the following:—

It used to be believed that the different kinds of tea came from different species of the tea-plant; but the researches of Siebold, which have been confirmed by Fortune, have demonstrated that one and the same plant, *Thea sinensis*, modified by climate, soil, and cultivation, furnishes all the tea which is in the market. Differences in the manner of preparing the leaves, and differences in the age of the leaves, also affect the quality of the tea; giving rise to differences in the commercial article.

Touching the influence of climate, it is worthy of note that the tea-plant will bear a wide range of climatic variation without suffering serious deterioration. The richness of the soil and the mode of cultivation, however, exercise a paramount influence on the quality of the tea. In this respect the tea-plant is like the tobacco-plant or the mulberry-tree.

Again, the method of preparation of the leaves is a comparatively trivial matter, whilst the age of the leaves is of prime importance. The youngest leaves give the best tea. Hence the explanation of the high price of choice varieties of tea. Choice teas consist of the youngest leaves, and to produce any considerable weight of young leaves a great number of plants are required; whilst the same weight of old or full-grown leaves is produced by a comparatively small number of plants. Zöller shows that the age of tea-leaves may be ascertained by a chemical examination of the ash left on incinerating them. As the leaves grow they lose in potash and phosphoric acid, both absolutely and relatively, and gain in lime and silica. Examinations made at periods fourteen days asunder exhibit these phenomena with sufficient distinctness. In the practical examination of teas there is, therefore, a very simple and valuable rule: much potash and phosphoric acid together with little lime and silica means good tea, and the reverse bad tea.

Having received a splendid specimen of tea grown in the Himalayas by a friend of Baron Liebig's, Zöller set to work and made a chemical investigation of it, and obtained the following results. In 100 parts of the tea there were 4.95 parts of moisture, and 5.63 parts of ash. The ash contained in 100 parts—

Potash	39.22
Soda	0.65
Magnesia	6.47
Lime	4.24
Oxide of iron	4.38
Protoxide of manganese	1.03
Phosphoric acid	14.55
Sulphuric acid	trace
Chlorine	0.81
Silica	4.35
Carbonic acid	24.30
Total,	100.00

These numbers show very plainly high potash and phosphoric acid, together with low lime and silica. Zöller also made an infusion of this excellent specimen of tea, and communicates some interesting particulars. 100 grammes of the leaves were infused for a quarter of an hour in 3 litres of boiling distilled

water, and the liquid poured off. Then a second 3 litres of boiling water were poured on the leaves and allowed to stand for a quarter of an hour. The 6 litres of infusion were subsequently evaporated to dryness, and the residue dried at 100° Cent. and weighed. This dry residue was found to amount to 36.26 per cent. of the original tea-leaves; the remark being made, that in the above described operation the tea-leaves could not have been perfectly exhausted of soluble matter, and that the real proportion of soluble matter in the leaves must have been still higher than the experiment indicated.

The tea-leaves in their ordinary, or air-dried, condition contained 5.38 per cent. of nitrogen. The percentage of thein in the leaves was found to be 4.94. Theobromine was also detected.

A comparison of the analysis of the original tea-leaves with that of the tea-leaves after they have been exhausted with boiling water is given. After extraction, the percentage of potash in the ash is 7.34, whereas, before extraction, the percentage of potash was 39.22; showing how the analysis of the ash may be employed as a criterion to recognize adulteration of tea with spent tea-leaves. A point insisted upon in this interesting memoir is, that the greater proportion of the nitrogenous material in tea is not present in the form of thein. Peligot has shown that this other nitrogenous material is a protein compound, being a substance like casein. Tea is, therefore, to some extent, food, and Zöller points out that 200 parts of Himalaya tea contain, in addition to the 4.94 parts of thein, 13.7 parts of protein compounds.—*The Lancet*, August 12, 1871.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

19. *Sudden Decrease in the Frequency of the Pulse during Disease as a Sign of approaching Cerebral Complication.*—Dr. GEO. GRAY calls attention to the sudden decrease in the frequency of the pulse during disease as affording very material aid to a prognosis of cerebral complication. This is important because, as well known, diseases of the brain, from the insidious manner in which they often approach, and from the great difficulty which exists of recognizing them in their earliest stages, together with that of making an accurate diagnosis, even when we know them to be present, demand very close and careful observation on the part of the physician. Dr. D., in three cases, has observed this sudden decrease in the frequency of the pulse during the course of diseases in which the pulse usually ranges high, some time before brain-complication could be recognized by any other sign.—*Brit. Med. Journal*, July 22, 1871.

20. *Reflex Epilepsy from Disease of the Ear.*—This is the first of two cases reported by KÖRPE and SCHWARTZ, in the *Archiv f. Ohrenheilk.*, V., 1871. The patient, a male, 21 years old, whose mother had from her childhood a discharge from her ear, and from six to seven years had suffered from convulsive attacks. From his third year the patient had, also, experienced a discharge from his left ear, following an attack of scarlatina. When he was 15 years old the discharge had entirely ceased, and by his 17th year he appeared to enjoy sound health, in every respect, save a slight pain of the ear. Towards the close of January, 1865, after indulging in violent gymnastic exercises he was attacked by severe pain in the ear and temporary fits of giddiness. The neighbourhood of the mammary process was especially the seat of severe pain. There now set in convulsive paroxysms attended with unconsciousness. These were repeated at regular intervals, and lasted for about fifteen minutes each. Various remedies were administered, but without arresting the epileptic attacks, which continued to recur at longer or shorter intervals up to 1869, when they became still more frequent, each lasting for many hours. The patient for some three weeks vomited everything taken into the stomach, whether food or medicine. On the 2d of August, 1869, the condition of the patient was as follows: Emaciated,

face pallid, the countenance bearing the impress of deep suffering, slight paresis of the left facial nerve, headache, at the apex of the left lung respiratory sound less moist, but no bronchial respiration. Heart-sounds normal. Pulse full and very slow—40 to 50. The neighbourhood of the mastoid process of the temporal bone somewhat swollen and slightly reddened. At a pallid spot towards the occiput there was great sensibility to the touch and even to gentle percussion. Through a perforation in the membrana tympani granulations protruded. The Eustachian tube was impervious. The case was considered by Dr. S. to be one of reflex epilepsy resulting from a peripheral irritation seated in the left ear. An opening was accordingly made into the mastoid process, in hopes that by thus giving discharge to the thick pus collected in the middle chamber of the ear and preventing its accumulation in future, to diminish or suspend the epileptic attacks. Accordingly in the part the most painful upon pressure a deep incision was made. Notwithstanding, not a drop of matter was discharged through this incision. Dr. S. was greatly pleased, on visiting his patient the next morning, to find him greatly relieved. The pain in the head especially was almost entirely gone. Not a single convulsive attack occurred, after the operation, equal in intensity to those which took place previously. The opening in the bone was maintained for several months by the insertion of *charpie*. On the twentieth day after the operation an irrigatory wash was injected into the wound, for the purpose of removing any remaining matter, through "the tube" into the throat and nose. November 11th, 1869, the wound in the mastoid process healed. February 26th, 1870, a single slight epileptic seizure occurred; vomiting continues. To the end of November, 1870, the patient experienced several light attacks of insensibility each of a few seconds' duration; since which time he has remained well, and gained flesh and strength.—*Centralblatt f. d. Med. Wissenschaften*, May, 1871, No. 20. D. F. C.

21. *Contraction of the Pulmonary Artery*.—M. CONSTANTIN PAUL read a very instructive paper on this subject before the Paris Hospital Medical Society. It was based upon a case which was under his care at La Charité, and which induced him to examine other recorded cases. From an analysis of this he has arrived at the following conclusions: 1. The pulmonary artery is not only the seat of congenital affections, but may also become the seat of disease acquired during extra-uterine life. 2. Among these lesions there is one of great importance—viz., a contraction of the pulmonary artery, acquired subsequent to birth. 3. This contraction is sometimes found on a level with the sigmoid orifice, being produced by adhesion of the valves, together with a contraction of the orifice, and sometimes even of the calibre of the artery at this level. In general, it is the result of endocarditis. 4. The contraction may occur at the level of the *infundibulum*, and forms a pre-arterial contraction. This is more commonly the consequence of a myocarditis. 5. The contraction may have its seat in one of the branches of the bifurcation of the artery; but M. Paul has never met with it in the trunk of the artery, as is seen in contraction occurring during the early months of intra-uterine life. 6. Beyond the contraction, the artery is in general dilated. 7. There is almost always a compensative hypertrophy of the right ventricle. 8. Valvular contraction may be accompanied by insufficiency of the same valves. 9. There may exist at the same time a lesion of the tricuspid and of the valves of the left heart. 10. The symptom which is proper to the contraction of the pulmonary artery is a systolic bellows-sound, that is more or less rasping (*râpeux*), and which extends over the cardiac region, but is at its maximum at the level of the pulmonary orifice, sending a characteristic prolongation in the course of the vessel. 11. The contraction does not give rise to cyanosis. 12. In the acquired contraction the *foramen ovale* is closed. 13. Still, myocarditis developed during extra-uterine life may give rise to, at the same time, a pulmonary contraction and a communication between the two hearts. 14. A contraction of the pulmonary artery, accompanied by a persistent *foramen ovale*, need not be necessarily congenital, if it become developed in a subject having the orifice open. The probability, however, would be that the contraction was congenital. 15. The proof that the contraction has arisen during extra-uterine life may be derived from the fact

of the lesions being recent. 16. A frequent complication of pulmonary contraction is consecutive tuberculization.—*Med. Times and Gazette*, Aug. 19, 1871.

22. *Lesions of Enteric Fever as an occasional Cause of Permanent Injury to Nutrition*.—Dr. T. CLIFFORD ALLBUTT, in a paper read before the Medical Section of the British Medical Association, drew attention to the convalescence from enteric fever, which was well known to be often very tedious; and he raised the question whether the specific lesions of that disease, affecting as they did the instruments of absorption, might not sometimes be the cause of permanent marasmus. In enteria, the local mischief not only fell upon the patches of Peyer in the ilium, but spread itself throughout the network of the mesentery. If a rat were fed upon tallow-candles and then killed, the presence of the fat in great quantities in the mesenteric system and glands showed how active was that system in taking up this element of nutrition. Any disease, therefore, which interfered with this system, like enteric fever within it, or chronic peritonitis outside it, would have its visible effect in hindering the absorption of fat, and in preventing the laying on of adipose tissue. These considerations occurred to the author in consequence of his advice being sought in several cases of marasmus, pure and simple, without local disease, without fever, and without adequate loss of appetite. In all of these a severe attack of enteric fever had preceded the marasmus. The patients who were almost denuded of all adipose tissue had, previously to the attack of enteric fever, been in good health. The only explanation which he could give of these cases was that the fever had acted upon the fat-collecting system in the way already pointed out. The notes of six cases of this kind were then read, but in one of these the marasmus had been preceded, not by enteria, but by a protracted affection of the bowels improperly named dysentery.—*British Med. Journal*, Aug. 26, 1871.

23. *On the different Therapeutic Indications of Rheumatism and Neuralgia*.—Mr. DE BERT HOVELL read a paper before the British Medical Association, at its late meeting, on this subject. He said that both rheumatism and neuralgia are conditions of ill-health attendant on low or depressed nerve-power; both are highly susceptible of pain. In rheumatism the first object is to eliminate the lactic and other allied acids from the blood, and to reduce the excess of fibrin; in neuralgia, on the other hand, to supply the deficiencies of the blood, adopting the opinion of Dr. Bence Jones, that the absence of quinoidine is the cause of malarious neuralgia. Similar treatment is called for in the neuralgia of exhausted nerve-power, in that of old age, and from organic disease. Both diseases are liable to aggravation from intestinal irritation, and neuralgia from carious teeth and other forms of diseased bone. In both diseases the susceptible condition of the nervous system calls for relief by some form of narcotic, &c. Acute rheumatism has frequently been observed to follow diphtheria, in which case it is important to ascertain that the urine is free from albumen before adopting the blistering treatment of Dr. Herbert Davies. Assuming that there is excess of fibrin in the blood in diphtheria as well as in rheumatism, cantharides has been found to check elimination by the kidneys, and so to aggravate the symptoms, especially the cardiac complications. In this class of cases iodine and the iodide of potassium are specially advocated.—*Medical Press and Circular*, Aug. 23, 1871.

24. *Nervous Origin of certain Cutaneous Affections*.—Dr. J. F. PAYNE, in a paper read before the Section on Medicine of the British Medical Association, stated that certain affections of the skin were more or less generally acknowledged to be governed in their distribution by the distribution of nervous structures, and were, therefore, presumably due to some abnormal nervous activity. Among these were more especially noticeable herpes, or herpes zoster, and that peculiar local induration of the skin called morphea. In a case of each of these complaints, described in the paper, the cutaneous manifestations were associated with affection of the motor part of the nervous apparatus. In a case of herpes in a child, affecting the right lower extremity, and correspond-

ing to the superficial branches of the anterior crural nerve, the appearance of the eruption was preceded for three days by temporary hemiplegia of the same side. The other case was that of a child suffering from hemiplegia, with some permanent contraction and occasional spasmodic movements of both the upper and lower limb, and in whom part of the skin of the face of the same side was affected with local scleroderma or morphœa. The skin of this part was hard and white, neither raised nor depressed; and the alteration was thought to be confined to those parts of the integument supplied by the superficial branches of part of the fifth cranial nerve. In both these cases the peripheral nervous affection giving rise to the skin-disease appeared to be dependent on some morbid condition—in the one case temporary, in the other chronic—of the nervous centres; and that this explanation might be applicable to other cases.—*British Medical Journal*, August 26, 1871.

25. *Lymphoma in Children*.—Two cases of enormous enlargement of the lymphatic glands of the neck, in children, are described by Dr. HUETENBREXNER, in the *Archiv der Kinderheilkunde*, IV. 1871. In both cases there was present immense intumescence of the lymphatic glands of the neck and of the throat. The swelling commenced at the chin, and from thence extended to the ear and occiput, and passing downwards in front into the subclavian space and thence into the anterior mediastinum, by a continuous chain of large, tolerably hard prominences, which, by their number, and the rough, irregular appearance they communicated to the entire neck, were the cause of no little deformity. When cut into, the enlarged glands exhibited internally a yellowish-white colour, throughout which, at intervals, were interspersed small spots of a dirty yellow colour (*hamorrhagic*). The histology of the two cases was similar. There was, in both, a uniform hypertrophy of the lymphatic elements of the glands, with an evident thickening of their capsules and connecting tissue. The cells presented usually nothing remarkable, save an abnormal increase of nuclei; frequently, however, only increase in size of their own number; or a development of many new cells of uncommon size and replete with an unusual multitude of nuclei. The only thing in which the two cases differed from each other was that metastasis was frequent in the one, while in the other it never occurred. In both similar, but never very considerable, enlargement of liver, spleen, and kidneys, was present; while the axillary, mesenteric, and inguinal glands were altogether normal. The bronchial, lumbar, and the lymphatics, at the hilus of the spleen, and about the pancreas, were evidently enlarged. Notwithstanding the extended field and high grade of lymphoma in these two cases, in neither did the composition of the blood exhibit any change, any trace of pseudo-leukæmia.

In respect to the parts to which metastasis of the glandular disease passed in the first case, the ordinary reticulated tissue was permeated with thicker cellulated matter. Each of the minute foci of the liver was surrounded by a ring of spindle-formed cells, which, whether they occurred in a single or in multiple layers, indicated to some extent the reaction zone of the liver. In conformity with the results of his early experiments (*Cbl.* 1869) Dr. H. considers the morbid element in these cases to be undeveloped, flattened, hepatic cells. In the up-piled strata there is neither evidence of an increase of hepatic cells nor a morbid augmentation of their nuclei.—*Centralblatt f. d. Med. Wissenschaften*, May, 1871, No. 20.

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26. *Pathology of Morbus Addisonii*.—In a very elaborate paper on this subject (*Deut. Archiv f. Klin. Med.*, vii., s. 34), RISEL, of Halle, analyzes the published cases of the disease, reports most carefully three others compared with two, almost as fully reported, older cases, together with their post-mortem results, and draws the following conclusions: The results of extirpation of the supra-renal bodies, and the course of numerous cases in which they were diseased, prove that in man they may be destroyed, so long as the ordinary pathological limits are not overpassed, not only without any evil effect on the general system, but often without any symptoms. The set of symptoms described as morbus Addisonii is dependent on an affection of the nerves in the neighbour-

hood of the celiac axis, the celiac plexus, and semilunar ganglia, and probably the superior mesenteric plexus as well; the affection being set up by secondary processes in the supra-renal bodies, and almost exclusively by tuberculous inflammation in them, this secondary inflammation serving as the medium between the affection of the bodies and that of the sympathetic. Disease of the celiac plexus occurs independently of mischief to the supra-renal bodies in affections of other organs (case of "Bronze Skin in Disease of the Pancreas," Bell and Fletcher, *Brit. Med. Journ.*, 1857, No. 45), and perhaps, also, spontaneously (case of Köhler's, *Würtemb. Corresp. Bl.*, 1862, Nos. 12 and 13). As far as is known, the affection of the sympathetic depends upon an inflammatory increase in the nerve-fibres and ganglion-cells of the surrounding connective tissue, and the changes resulting, in consequence, in the sympathetic itself and its nervous elements. The only conceivable possibility of recovery in morbus Addisonii would be a retrogressive metamorphosis of the products of inflammation, and a return to the normal state, before the nervous elements have taken any essential and active participation in the process. The affection of the sympathetic is manifested by a paralysis of its vaso-motor fibres, which causes excessive accumulation of blood in the abdominal vessels, and a corresponding emptiness of all parts of the circulatory system outside of the latter. This abnormal blood-distribution causes phenomena more or less resembling those observed in collapse and in anæmia of the nervous centres. The early symptoms of anæmia of the brain are probably obscured by the previous development of a secondary and but little understood blood-alteration, which very probably causes the bronzing of the skin. By far the majority of cases of morbus Addisonii, judging from their generally chronic course, are complicated with diseases of other organs, which, according to their importance, may occasion essential variations in the course, and post-mortem appearances, of individual cases.—*Bienn. Retrospect. of New Sydenham Soc.*, 1871.

27. *Researches upon the Nature and Origin of Paludal Miasms.*—In examining with the microscope the waters of the Pontine Marshes, those of Maccarebe and of Ostia, M. BOLESTRA found them filled with infusoria of different species, varying with the condition of the water and the degree of its corruption (Bursariens, Trichodiens, Vorticelliens). But among these beings, those which were more striking by their presence in the waters of these marshes, and always in number proportionate to the extent of their putrefaction, is a little plant, a granular mycophyte pertaining to a species of the algæ, special and constant in its form, which slightly recalls that of *cactus peruvianus*. It is always mixed with a considerable quantity of little spores of $\frac{1}{1000}$ of a millimetre in diameter—greenish-yellow and transparent—as well as with the sporanges or vesicles containing these spores, $\frac{1}{100}$ to $\frac{3}{100}$ of a millimetre in diameter, and of very characteristic forms.

This alga floats upon the surface of the water; it is iridescent when young, and it gives the appearance of oil-stains. In the low temperature of caves, as well as in water not containing vegetable growths, this alga, with the numerous spores which accompany it, develops itself very slowly. If it is found in contact with air exposed to the rays of the sun and in the presence of plants in a state of decomposition, it grows very fast, and it disengages little gaseous bubbles.

In examining the air of Rome and its environs, Dr. Bolestra found the same spores in proportions varying with the epoch and the season; they were much more abundant at the end of August, and particularly when examined the day succeeding a rain. The number of the spores was much less, however, than when the experiment was made upon water condensed in the atmosphere of the marshes.

M. Bolestra, from the numerous observations which he has made, is led to think that the miasmatic principle of these paludal localities resides in the spores themselves, or in some poisonous principles that they possess. The alga which produces them does not develop in times of great dryness, but it can be produced after a slight rain falling in a warm season, which soon leaves the earth dry that it has moistened; or by heavy dews and thick fogs which rise

from the sea and from morasses, as a result of which the detachment and migration of the spores can be effected: the author in this way explains the development of intermittent fever, which, feeble and momentarily suspended in times of dryness, acquires near Rome a great intensity in the months of August and September. If this endemic of paludal fever does not manifest itself in the winter, according to his view, it is less on account of the cold which prevents the vegetation of the alga, in retarding the decomposition of organic substances, than by the abundance of the rains which cover the localities where the spores are found. Their dissemination in the air, which is really possible even in the midst of the water, as has been shown above, is rendered more active in a notable way by the state of dryness of the soil upon which they are deposited. He also explains by the action of the salts of quinia upon these spores, the powerful antimiasmatic virtue of these medicaments.—*Report made to the French Acad. Sciences, Archives Générales*, Sept. 1870. F. P. P.

28. *Ought Persons in whom there is a Tendency towards Mental Aberration to Marry?*—At a recent meeting of the Medico-Psychological Association, the president, Dr. MAUDSLEY, discussed this question, which he said was a most difficult one by reason of the different degrees of liability to insanity which necessarily existed in different individuals. Then, again, the phenomena of atavism and the alternation of neuroses very much complicated the question. For instance, the son of a madman may escape and the grandson be utterly insane; and the offspring of epileptic or neuralgic parents may show very strong tendencies towards insanity. Again, it had been remarked that the offspring of the insane had not unfrequently been men of great genius, and hence the question arose whether, by forbidding the marriage of a man with tendencies towards insanity, we might not be depriving the world of a mind which would more than compensate for innumerable mental aliens. The descendants of the insane are often very original thinkers. They explore the little-trodden paths of knowledge, they have often indomitable energy, and are careless of all obstacles. Dr. Maudsley thought that if a man had actually had an attack of insanity, we ought to use all our powers of persuasion to prevent his marrying, but in other cases he did not recognize the utility of interfering. He thought that not much was to be done for the prevention of insanity by the prohibition of marriage, but that more could be done by the careful and scientific education of the children of the insane. No person predisposed towards insanity should be considered as a helpless victim to his fate. A man can, to a certain extent, by sheer force of his will, make his character grow to the ideal he sets before himself, and, undoubtedly, a great deal is to be done by the careful mental training of those predisposed towards insanity. The insane themselves, it is well known, have at times a great power of control over their actions; and, *à fortiori*, those who are merely predisposed towards insanity should be likewise able to exercise this control. Unfortunately, as a rule, children with an hereditary taint are always worse managed than other children, and are, therefore, doubly cursed.—*The Lancet*, August 12, 1871.

29. *Madness in Animals.*—The *Journal of Mental Science* (July, 1871) contains a highly interesting and instructive paper on this subject, by Dr. W. LAUDER LINDSAY, physician to the Murray Royal Institution (for the Insane). The main object of the paper is to draw attention to what he believes is an easily provable fact, that *much, at least, of the so-called madness of the lower animals is strictly equivalent to what is called insanity in man*. "I do not propose submitting," he says, "the grounds on which I confidently base this assertion. I have elsewhere sufficiently shown, I trust, that *other animals have minds of the same character as that of man*;"¹ and I have also fully pointed out that these minds are subject to the same kinds of disturbance or disease as

¹ In a paper on "The Physiology of Mind in the Lower Animals:" *Journal of Mental Science*, April, 1871.

in man.¹ I have already explained that as respects the *physiology of mind*, man and the lower animals occupy essentially the same platform; and I will by and by show—or endeavour at least to do so—that, as regards the *pathology of mind*, the same statement is equally true.² In other words, I hope to be able to prove³ that, *both in its normal and abnormal operations, mind is essentially the same in man and other animals.*

"It is no part of my present object to say anything specially of *rabies* in animals, or *hydrophobia* in man, save that—

"(1.) I believe both to be comparatively rare.⁴

"(2.) Hydrophobia in man is frequently, if not generally, the result of terror, ignorance, prejudice, or superstition, acting on a morbid *imagination* and a susceptible nervous temperament.

"(3.) The majority of cases of so-called *madness* in animals, which are usually attributed to *rabies*, are really of the nature of *insanity*, strictly comparable with that of *man*.

"(4.) The majority of the cases of animal madness, which are not assignable to *rabies*, are of the character of *mania*, as it occurs in *man*.

"Inasmuch as (a) certain animals possess all the constituent elements of mind; and (b) as they are exposed to many, at least, of the same influences that are productive of functional cerebral disturbance in man,⁴ it would be strange indeed were these other animals exempt from *insanity*, of the character—*mutatis mutandis*—of that which occurs in man. Dr. Maudsley⁶ tells us that the elephant, at certain periods of the year, is 'veritably mad;' when it becomes dangerous to man from its furious assaults. He does not, however, give his authority or evidence for the statement, though I have no doubt as to its truth. Here the insanity is apparently a form of *acute mania*, of an ephemeral or temporary, as well as periodic, character. The following is an illustrative description of one of the periodic maniacal outbursts so common in that animal: 'An elephant, employed by the government of India in hauling teak logs for the Forest Department, in the Anamally Forest, lately brought about a suspension of operations for above a fortnight. He began by knocking down his keeper, but luckily did not kill him. He then made for the huts of the keepers, whose wives and families were driven into the jungle. He displayed his skill in pulling down the huts; smashed up the carts and implements; and destroyed a quantity of provisions stored up for his brother elephants. After keeping the settlement in alarm for fifteen days, he was shot in one of the legs, and then caught and chained⁶—a much less barbarous and summary procedure than that adopted with rabid dogs and horses at home! In this case there is no appearance and no suspicion of *rabies*. We frequently read in Indian newspapers, or quotations therefrom, of elephants being 'on the rampage,' and in this condition destroying numbers of men, women, and children, as well as horses or other domesticated animals. The term 'rampage' applies, apparently,

¹ In a paper on "Insanity in the Lower Animals:" British and Foreign Medico-Chirurgical Review, July, 1871.

² A paper on the "Pathology of Mind in the Lower Animals," as a sequel to that on its Physiology, is in preparation for the Journal of Mental Science.

³ Dr. Lindley Kemp has pointed out that animal *rabies* is epidemic, and that human hydrophobia is very rare during the prevalence of epidemic *rabies*. Dr. Wilks and other physicians of the London hospitals have also remarked the extreme rarity of cases of either true or spurious hydrophobia in the metropolis. A correspondent of the *Association Medical Journal* (1856, pp. 767 and 840) asserts, on the authority of Dr. Watson, "that but few of those persons bitten by rabid animals become subsequently affected with hydrophobia." (*Vide* paper on "The Distribution of the Mortality from Hydrophobia in England," by J. N. Radcliffe, *Med. Times*, vol. ii., for 1858, p. 22.)

⁴ I have quoted cases of madness in the dog—produced by cold, darkness, and hunger—in my paper on "The Causes of Insanity in Arctic Countries:" Brit. and Foreign Medico-Chir. Review, January, 1870, pp. 212, 216, 217.

⁵ "Genesis of Mind:" Journal of Mental Science, April, 1862, p. 64.

⁶ *Athenæum*, Dec. 17, 1870, p. 807.

not to animals that are simply in their wild or natural state, but to a condition of *acute mania*, marked by the development of dangerous destructiveness. The condition, indeed, would appear to be strictly analogous to what, among the Malays, is known as 'running a muck,' when they deal out indiscriminate destruction to every human being coming in their way."

Dr. Lindsay quotes many examples of insanity in other animals, and shows that all dogs which are *mad are not mad from hydrophobia*. He regards, very justly, we feel convinced, many of the cases of animal rabies and human hydrophobia as of the most anomalous and worthless character.

"At present," he says, "animals are persecuted, ill-used—often *goaded into fury*; and mania is, therefore, the commonest form of insanity in animals." "If," he adds, "as I have elsewhere shown, or will show, animals *feel* as keenly as we do, both in a mental and bodily sense; if they *think and act* in the same way under similar circumstances; if they are subject to the same *diseases* that affect man, and to the same influences that in him give rise to insanity; if medication in other diseases in other animals is conducted on the same general principles as in man, the same drugs frequently producing, under similar circumstances, similar effects; and if the lower animals are equally subject with man to the operation not only of purely physical, but also of purely *mental or moral*, as well as of mixed influences, there can be no reason why the *treatment* of insanity in other animals is not conducted on the principles which regulate that of human insanity, adapting the details, of course, to the peculiarities of their organization and habits. If this be the case, the present mode of disposing (*e. g.*) of mad dogs must appear singularly unjust, unnecessary, tyrannical, and cruel. I believe that the first and most important practical lesson, which veterinarians may and should teach themselves by a study of the mental phenomena of disease in the lower animals, is to treat them on the same humane principles as those which now characterize the management of the human insane. The veterinarian's views of treatment cannot fail to become revolutionized whenever he clearly perceives and admits that only a few cases of animal madness are really referable to *rabies*, while the majority are of the same nature as the *insanity* of man, producible by similar causes—removable, in recent cases, by similar means."

Dr. L. adduces many illustrations of the existence of diseases common to man and animals, and of the transmission of diseases to and from man and other animals; and concludes by stating—"I hope to show (*a*) how much yet remains to be added to our knowledge of diseases that affect all or many classes of animals; (*c*) how likely it is that many diseases, still regarded as exclusively human, will yet be found to be more extensively distributed in the animal kingdom; and (*d*) why it is that we must look for diseases most nearly approaching, in their symptomatology and etiology, those of man, in animals which most closely resemble him in their structure and habits."

30. *Treatment of Insane Persons*.—Dr. MAUDSLEY, in his address before the Medico-Psychological Association, said, with regard to the treatment of insane persons, he thought the fashion of at once despatching a lunatic to an asylum should by no means be necessarily followed in all cases. Many cases recovered without ever being sent to an asylum, and many cases were on record which baffled all treatment while resident in an asylum, but rapidly recovered after effecting their escape. M. Comte was a notable instance of this. He was an inmate of Esquirol's asylum, but, managing to effect his escape, he recovered and wrote his famous work on "Positive Philosophy." On the whole, Dr. Maudsley thought that only in a very few cases was it absolutely necessary to send the patient to an asylum. The recovery of many patients was retarded by the absence of "home influence," and the utter banishment from their friends and relatives which was entailed upon them. It was unfortunate that the treatment of the insane had become such a narrow specialty, and it would be an excellent thing if the State would authorize medical men to receive a very small number, say two or three, insane patients into their houses. He believed that patients placed in this position would be more likely to do well than those who were sent to larger establishments.—*The Lancet*, August 12, 1871.

31. *Abuse of Sedatives in Insanity.*—Dr. MAUDSLEY seriously doubts if it were always a wise thing to stifle excitement, and whether a chemical restraint put upon the brain-cells was not often as injurious to the patient as a mechanical restraint imposed upon his limbs. He thought that sedatives were given far too recklessly; that, although they might relieve symptoms, they often only served to push the patient further down the hill, and as often as not, retarded recovery. He thought that the whole range of sedatives, including bromide of potassium and the hydrate of chloral, were all equally capable of being abused; that by giving them we often materially damaged the patient's general health, and, instead of curing, we often merely "made a solitude, and called it peace."—*The Lancet*, August 12, 1871.

32. *Ergot of Rye in the Treatment of Mental Diseases.*—Dr. J. CRICHTON BROWNE, Medical Director West Riding Asylum, states (*The Practitioner*, June, 1871) that during the last six years he has made an extensive series of experiments with ergot of rye in the treatment of the various forms of insanity, and has arrived at results which he believes to be of considerable practical importance.

"A remark of Brown-Séquard's, imputing to this drug the power of producing contraction in the vessels of the spinal cord, suggested to me, at the time which I have stated, the possibility that it might possess a similar control over the vessels of the brain, and might thus be made to modify the functional activity of that organ. This supposition derived probability from a perusal of many scattered observations in medical literature, as to the phenomena of ergotism, and was converted into a certainty in my own mind before I had pursued my investigations very far. As these proceeded it became, indeed, a matter of surprise that a medical substance, long known and prominently displaying in its toxic effects a potent influence over the nervous centres, should not have been resorted to at a much earlier period, as a therapeutic agent in some of the disorders by which these centres are affected. The remarkable uterine relations of ergot, however, seemed to have absorbed nearly all the attention bestowed on it. With the exception of Lallemand and Petrequin, who employed it with benefit in paraplegia, no one has thought it worthy of trial in cerebro-spinal lesions or derangement. No one certainly has tested its efficacy in those classes of cases which I am here to describe as peculiarly amenable to its benignant action. What these classes of cases are it may be as well at once to define, more especially as they do not include all those which the preliminary statement as to its physiological actions might appear to imply. My experience of ergot does not enable me to attribute to it, as yet, any advantageous action in many of those acute forms of mental disorder in which, from its alleged control over the dimensions of the intracranial vessels, it might have been presumed to be most useful. It only justifies me in asserting that it is eminently useful in certain varieties of (1st) recurrent mania, (2d) chronic mania with lucid intervals, and (3d) epileptic mania. In these forms of cerebral derangement I have found it almost uniformly efficacious in reducing excitement, in shortening attacks, in widening the intervals between them, occasionally in altogether preventing their recurrence, and in averting that perilous exhaustion by which excitement is so often succeeded. It can be scarcely requisite to point out that these actions which I have ascribed to ergot constitute it an invaluable instrument in asylum practice, as those conditions over which it is most influential are amongst those which have been hitherto regarded as highly intractable, and which, from the dangerous symptoms by which they are accompanied, have been unfailing sources of anxiety and harassment. Anything which will abridge the duration or favourably modify the course of intermittent chronic or epileptic mania, must prove an inestimable boon, not only to the sufferers from these maladies, but to those who have to associate with them and wait upon them."

The action of ergot in the conditions above enumerated, Dr. B. believes, is due to the controlling power which it possesses over the dimensions of the bloodvessels, and he adduces various reasons which appear to him to justify this opinion.

33. *Cervico-Brachial Neuralgia, treated by the Constant Current.*—Dr. BUZZARD read before the Clinical Society of London, May 12th, 1871, the case of a woman æt. 65, who had suffered for three months from paroxysms of agonizing pain in the neck and right arm, which attacked her several times every hour, night and day, depriving her of rest and rendering her arm useless. The neuralgia had followed seizures which sufficiently indicated its central origin, and this, coupled with the age of the patient, and the degeneration of her tissues, rendered its cure in the highest degree improbable. Applications of a sedative character had been useless in relieving her suffering. A constant current derived from ten cells (increased afterwards to fifteen cells) of a Weiss's battery was applied from time to time between the cervical vertebrae and the hand, with the effect of producing remarkable relief to her pain, inasmuch that at one time she thought herself cured. Under the influence of this treatment the patient was enabled to sew, and to cut her food with the right hand, which had previously been so helpless that she was forced to lift it with the other. With the view of testing the effects of the application, it had been intermitted on several occasions, and other remedies, as blisters, sedatives, and tonics, had been employed, but these failed in preventing the paroxysms of pain. Summing up the results of treatment, Dr. Buzzard said that out of sixteen applications of the constant current, ten had been followed by very great and well-marked relief, two by moderate relief, and four by very slight relief. Dr. Buzzard brought the case forward not as one of cure of neuralgia, but as a good example of the effects of the constant current in relieving pain, and he drew attention to the process because he believed it was as yet very little employed for this purpose in this country, although, as was well known, its efficacy had been perfectly recognized and insisted upon abroad for many years past.

Dr. Anstie offered, as a pendant to Dr. Buzzard's case, two examples of the treatment of neuralgia with the constant current, one successful, the other unsuccessful. He remarked that the effect of the constant current in neuralgia was very remarkable, but that there were, as yet, some unexplained anomalies in its action. In the large majority of cases it acted as a palliative most strikingly. In a not inconsiderable number of cases it appeared to cure the disease absolutely. But in a few examples, like the second case he had read, without any discoverable reason, it failed to produce any good results. As a general rule it was far less effective in the neuralgias of old persons, with degenerated tissues, than in younger subjects. But occasionally even a young subject, like his second patient, quite failed to derive benefit from it.—*Lancet*, May 20, 1871.

34. *Bromide of Potassium in Epilepsy.*—Dr. LUTZ states, in *Berliner klinische Wochenschr.*, 1871, No. 18 (we quote from the *Centralblatt f. d. Med. Wissenschaften*, July, 1871, No. 28), that he has administered the bromide of potassium in ten cases of epilepsy. In three of the cases the paroxysms had been entirely suspended for six months, while in the remainder of the cases the intervals of their recurrence were greatly extended. He began with from 1 to 3 grm. per diem, and gradually increased the daily dose up to 10-20 grm. The curative powers of a combination of bromide of potassium with bromide of ammonium are greatly extolled by Dr. L. He has derived, also, good effects from the use of bromide of potassium in nervous headaches. In cases of nocturnal enuresis the remedy has proved promptly successful. D. F. C.

35. *Hydrotherapeutic Treatment of Neo-typhus.*—In the *Wiener Medicin. Wochenschr.*, 1871, Dr. KRUEGKULA, from the medical clinic of Professor Duchek in Vienna, reports that 60 patients affected with typhoid fever were subjected to the "cold-water treatment." That is to say, from 6 o'clock A.M. to 10 P.M. the patients were subjected to a full bath of cold water of 15°, at such intervals as was found necessary to keep the temperature of the patient's body at 39° C. For comparison sake, 26 other typhoid patients were taken, without selection, and treated in the ordinary manner. Of the first group 28.3 per cent. died, of the last 26.9 per cent. Consequently, it is to be inferred that the cold-water bath had no influence either upon the final termination of the

disease, nor, as a special analysis of the cases shows, upon the occurrence of complications.—*Centralblatt f. d. Med. Wissenschaften*, May, 1871, No. 21.

D. F. C.

36. *The Sesquichloride of Iron* [*Ferri Chloridi*, U. S. P.] as a *Prophylactic in Acute Rheumatism*.—Dr. ANSTIE states (*Practitioner*, Sept. 1871) that “a considerable number of persons present themselves in my out-patient room, in the course of twelve months, suffering from the preliminaries of acute rheumatism; it is one of the small group of really serious diseases (amongst a much larger variety of trivial complaints) which occupy one’s attention in out-patient practice, and was formerly a matter of great dissatisfaction to me, from the apparently almost total failure of remedies to produce any effect. Whereas threatenings of gout could be very commonly dealt with in such a manner as to prevent the attack, or render it trivial, the onset of acute rheumatism seemed never to be averted by drugs when once the prodromata had reached the stage which pretty frequently presented itself before me, viz., a more or less obscure aching of several joints,¹ a yellow sallowness of face, with patches or streaks of dusky redness, blanket-like furring of tongue, an oily moisture of skin, a distinct though slight elevation both of pulse and temperature, and a certain anxiety of respiration. So far as the history of such patients could be traced, they were almost invariably found to have developed the full symptoms of the acute disease, and very often (after once seeing them in the out-patient room) one encountered them, a few days later, in a ward of the hospital.

“Very different have been the results of treatment since I adopted the use of full doses of sesquichloride of iron from the first moment of such cases presenting themselves. During the past twelve months I have done this fully. Whenever a patient has presented himself with articular pain and slight fever that were plainly of the rheumatic and not of the gouty type, he has been at once placed on thirty or forty minim doses of the tincture of sesquichloride, from three to six of which, according to the severity of the symptoms, have been given in each twenty-four hours. I have several times called the attention of students to the fact that (unlike what used to happen) these cases now reappear in my out-patient room on my next hospital day; and in the great majority of instances declare themselves greatly relieved. Since July, 1870, I have treated twenty-nine such patients, of whom thirteen had previously had one or more regular attacks of rheumatic fever, for the symptoms now referred to, with the full doses of iron; and of these, seventeen have lost all pyrexia and spontaneous joint-pain within the three or four days elapsing before my next day at the hospital. Only three have, under my own eyes, developed the full acute disease, and been sent into the ward. Of the remaining nine, four disappeared altogether from my knowledge, so that I cannot say what became of them; the other five, though their symptoms were checked, remained in a state of what might be described as sub-acute rheumatism during from ten to twenty-two days.

“I cannot help remarking with emphasis on the contradiction to old ideas which is involved in the effect of this iron treatment upon the furred tongue. Of course it becomes speedily blackened; but so far from the furring increasing, or the dryness and foul taste becoming more pronounced, what commonly happens is, that after a few days the epithelial coating falls off in considerable patches, and the tongue soon cleans altogether. I believe the prophylactic treatment of rheumatism by the sesquichloride to be one of the most valuable recent improvements in medicine.”

37. *Treatment of Psoriasis by Balsam of Copaiba*.—Dr. H. S. PURDOW calls attention (*Journal of Cutaneous Medicine*) to the balsam of copaiba as an excellent remedy for psoriasis. He says that during the last eight months he

¹ I have, on the contrary, known pain in or near a *single* joint (sometimes simulating neuralgia), with slight fever, sallow skin, &c., yield to iodide and bicarbonate of potash.

"has had under treatment at the Belfast Hospital for Diseases of the Skin an unusually large number of cases of psoriasis. The opportunity thus offered of grouping together a certain number of cases, and of investigating the different effects of certain remedies, as arsenic, carbolic acid, hypophosphite of soda, cod-liver oil, quinia, balsam of copaiba, &c. In some cases local treatment was also ordered. Without, however, entering into details regarding the different modes of treatment, or extending this paper with the recording of cases, I may be permitted to say that the treatment of psoriasis, *when no acute symptoms were present*, by large doses of balsam of copaiba, given with a little liquor potassæ, mucilage, and water, has been highly gratifying, especially in cases where it has produced extensive urticaria; indeed, the dose should be increased till the latter is established. I have also been able to discharge the patients sooner by means of the balsam treatment than by any other, nor have any of them as yet had a relapse, which in psoriasis is generally the rule, but, of course, the time is too short to speak definitely on this point."

38. *Treatment of Itch in Children.*—A. MOYRI, from a suggestion of Froehlich, undertook a series of observations to test the value of balsam copaiba as a remedy for itch in children (*Centralblatt f. d. Med. Wissenschaften*, April, 1871). He first showed that the recently extracted *itch insect*, when immersed in balsam copaiba, in an hour or two died. When applied to the skin, the copaiba causes considerable redness, with a sense of burning, which disappears in half an hour, and with it, also, the intolerable itching. After a day or two, during which inunction has been practised three or four times, the redness of the skin disappears entirely. In no case was there observed any disturbance of the urinary or digestive organs. The treatment lasted, in different cases, from two to twelve days. The form of the disease which gave way the most quickly was the *scabies nodosa sine eczema*. Over eczematous and pustular forms the copaiba exercised no influence. The copaiba is preferable to the balsam of Peru—it has, also, a more agreeable odour, and does not stain the linen. Trials were also made with *carbolic acid* as a remedy in itch. It was employed as a wash—one to two drachms to one pound of water, or as an ointment, one drachm to four ounces of simple cerate. After cleansing the skin by means of a bath, the carbolic acid is to be well rubbed in at the seat of disease. In *scabies pustularis* the acid should be applied mixed with poultices. The reddening and burning of the skin caused by it quickly disappear. The duration of treatment is generally very short. Usually from six to nine applications of the acid during two to four days will suffice. A longer period is required when eczema is present. The acid is particularly adapted to cases of children.

D. F. C.

39. *Hypodermic Injection of Quinia in Malarial Fevers.*—Mr. A. S. G. JAYAKAR highly extols (*Indian Medical Gazette*, July 1, 1871) the efficiency of hypodermic injection of quinia in malarial fevers. That quinia, he says, "does arrest an impending attack of malarial fever, that in some cases it leads to an immediate cure, and that its administration with the hypodermic syringe is followed by the most beneficial effects, view it either in an economical point or from its rapid and certain action on the system, are facts now more or less generally admitted. Having myself used it in this manner now for more than two years, and between myself and my hospital assistant, Luxmon Sing, having administered it over a hundred times, I may be allowed to speak of it with a certain degree of confidence. The dose I have generally administered has varied from $2\frac{1}{2}$ to 3 grains of quinine sulphate, dissolved in 4 minims of dilute sulphuric acid, and 75 minims of water.

"In most of the cases the first dose was quite sufficient to put a stop to any further attack of fever, and in some cases it has greatly benefited the patient by prolonging the period of intermission, and thus allowing nature to overcome the ill effects of the previous attack, and finally preparing the patient's constitution to withstand, to some extent, any further invasions of the disease. I must here acknowledge that my experience of it in remittent fever is rather limited, but such of the cases as I have tried it in, being of a slight and uncom-

plicated nature, its administration was followed by an almost immediate and marked change. In one case in particular, remittent fever, complicated with pneumonia, the hypodermic injection of $2\frac{1}{4}$ grains of quinia was followed by the entire disappearance of the fever, much to the patient's surprise, although the patient had a relapse of it in about a week.

"But, above all, the most marked beneficial effects of the hypodermic injection of quinia may be observed in cases of brow ague, or hemicrania, dependent for its cause on malaria. In some cases the only indication of the influence of malaria on the system is the existence of hemicrania. The suffering of the patient, which is sometimes excessive and most unbearable, sufficient to make one mad, calls at our hands for an immediate means of relief, and such a means we have in the hypodermic injection of quinia. To the patient's great surprise and joy, he finds himself within five to ten or fifteen minutes either greatly relieved or entirely cured, only one injection having proved successful in some cases. In no instance do I remember its having failed either in my own or my assistant's hands. * * *

"As to the causes of failure, when we come to look into them, they are but very trivial. If the solution is freshly prepared, and if the needle is well pushed under the skin into the cellular tissue, so that it can be fairly moved about, I do not see why the injection should fail in having its proper effect. Concentrated solution of quinia, I have observed, when kept long, deposits quinia in a crystalline form at the bottom of the bottle, and this may account for failure in some of the cases that have been reported as failures. Excepting in one instance, I have never seen ulceration follow the hypodermic injection of quinia; and even in that case it is very doubtful if the previous injection of tartar emetic (the patient having suffered from apoplexy), which was given within half an inch's distance from the quinia injection, did not give rise to ulceration. If the nozzle is passed in between the different layers of the skin, instead of into the cellular tissue, and the fluid injected, I can easily see that the result of such a course would be ulceration; but luckily we have, in the great difficulty in injecting between the different layers of skin, a great means of averting such an evil consequence."

40. *Chloride of Sodium as a Substitute for Sulphate of Quinia in Intermittent Fever.*—Dr. PICHET states that he was in charge for six weeks of the camp at Sathonay, in which were many soldiers affected with African fevers. Having for a month been without any sulphate of quinia, he was induced to try the chloride of sodium as a substitute for it. He gave, from seven to eight hours before the paroxysm, ten grammes of chloride of sodium, and he had the satisfaction of finding that in more than half of them the paroxysm was arrested and convalescence established as quickly as in those who took quinia. He gives the following directions for its administration:—

1. Ten grammes of the salt are to be given in a sufficient quantity of water to dissolve it; half a glass is sufficient. If given in a greater quantity of water, it purges, and the paroxysm is not arrested.

2. Large crystals of the salt should be selected, as in this form it seems to be more efficacious.

3. If there is any positive embarrassment, with or without diarrhoea or coated tongue, the treatment should not be commenced until the patient is purged.

4. Two doses of ten grammes should be given every day, the first dose seven or eight hours before the paroxysm, and if the paroxysm is not arrested, a second dose is to be given immediately after it goes off. We may without physiological inconvenience repeat these doses for three or four days.—*Revue de Thérapeutique*, July 1, 1871, from *Lyon Médicale*, Dec. 1870.

41. *Carbolic Acid in Intermittent Fever.*—We learn from the *Centralblatt f. d. Med. Wissenschaften*, May, 1871, No. 20, that Dr. TREULICH has found, in cases of inveterate intermittents, against which quinia has proved wholly ineffectual, that carbolic acid promptly and permanently arrested the disease, and without any bad consequences. The medium dose of the acid employed was $4\frac{1}{2}$ grs., administered in an infusion of gentian, and was given three times daily.

In eight cases of intermittents, with evident enlargement of the spleen, in the cure of which quinia had failed, the carbolic acid succeeded in a remarkably short time. From this Dr. T. infers that paludal fever is the result of a parasitical blood-poisoning.—*Wien. Med. Presse*, 1871, No. 12. D. F. C.

42. *Quinia in Hooping-Cough*.—Dr. STEFFEN states (*Jahrbuch f. Kinderheilkunde*, N. F. IV.) that his experience has confirmed, in the main, the accuracy of the observations of Bintz and Breidenbach (*Centbl.*, 1870) on the beneficial action of quinia in quieting the convulsive cough in the pertussis of children. In this the quinia has seldom failed, when given in sufficient doses. When the child obstinately refuses to swallow the medicine, it may be carefully instilled through the nostrils or given in enemata. In one case, in the course of three days, nine enemata were administered, containing, in all, two grammes of quinia. Dr. S. adds two remarkable instances in illustration of the curative power of quinia in hooping-cough. In one of the cases the disease was complicated with bronchitis.—*Centralblatt f. d. Med. Wissenschaften*, April, 1871. D. F. C.

43. *Chloral Hydrat. in Tetanus (Trismus) Neonatorum*.—Dr. F. AUCHENTHALER relates a case of trismus nascentium, occurring in an infant seven days old, treated by hydrat-chloral in doses of grs. 6, dissolved in the mother's milk. During the convulsive paroxysms the medicine was carefully instilled through a nostril. Immediate benefit was evinced, and in nine days the disease had entirely disappeared. During that time the child had experienced twenty-seven tonic paroxysms, and had taken 25 grs. of chloral hydrat. The temperature of the child's body during the convulsive paroxysms was seldom increased, and at no time rose beyond 70° C.—*Centralblatt f. d. Med. Wissenschaften*, 1871, No. 17, from *Jahrb. f. Kinderheilkunde*, N. F. IV. D. F. C.

44. *Hydrate of Chloral in Sea-sickness*.—We find in the 54th number for 1870 of the *Centralblatt f. d. Med. Wissenschaften*, that in the *Wiener Med. Wochenschr.* (Nos. 52, 53, 1870), Dr. DOERING, impressed with the known inefficacy of all the so-called specifics for the cure of sea-sickness, and having, as naval surgeon, ample opportunity for testing the value of remedial agents, and observing that most patients affected with sea-sickness laboured, also, under great restlessness and loss of sleep, was induced to try the effects of chloral. Eight of the most marked cases of the disease were chosen, and to each 4 gramm. of the hydrate of chloral, divided into two equal doses, were administered; the second to be given after a short interval from the taking of the first, and so repeated until there occurs a cessation of the restlessness and a lengthened sleep ensues, after which a final and complete cessation of the disease usually follows. D. F. C.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

45. *Cirroid Aneurism*.—In the *Prager Vierteljahrschr. für Heilkunde*, 1869, iii., iv., C. HEINE has collected the histories of sixty cases of cirroid aneurism affecting the head, or, as he calls it after Virchow, *angioma arteriale racemosum*. Of the sixty cases, forty-three are described as instances of acute angioma, that is to say, where, after some premonitory symptoms, a swelling was formed by the dilatation of a defined arterial region. There were fifteen doubtful cases, in six of which the suspicion of a pulsating telangiectasis, and in seven that of an arterio-venous aneurism, could not be excluded, and in two cases there appeared to have already been mere paralytic distension of the arteries. The case of a man, aged twenty-one, is related, who had a pulsating swelling of the

size of a plum at the upper edge of the left helix; it extended over the squamous portion of the temporal bone, and appeared to be connected with the arteries of the opposite half of the forehead and cranium. There were also two smaller swellings on the upper convexity and posterior border of the anhelix. The temporal and posterior auricular arteries were much dilated; compression of these vessels only weakened the pulsation in the tumour. The disease had commenced as a simple, congenital nævus, which rapidly increased at puberty, especially on the cessation of an epistaxis which up to this time had occurred almost daily. Heine tied the temporal and auricular arteries, and, as this produced no effect on either the pulsation in the tumour or its size, he tied the external carotid, placing in addition a second (distal) ligature on this vessel and the superior thyroid artery together. The pulsation of the tumour thereon ceased; in removing it, however, it was necessary to apply thirteen other ligatures, and acupressure had to be applied to nine arteries of middle size. Considerable hemorrhage occurred twice on the fifth day, and was arrested by ligature of the common carotid artery. Perfect recovery followed in two months. Heine found some remarks on forty-five authentic cases of cirroid aneurism. In thirty of these nævus was observed either at birth or in very early childhood; in the latter case it had, perhaps, been congenitally present in the muscles or glands, or in the bones, but had only at a later period become visible. The conditions under which a simple nævus may become developed into a cirroid aneurism are mechanical injuries, puberty, pregnancy, general plethora, and transient hyperæmia. The operation of these conditions, especially in nævus affecting the head, is to be explained partly by the greater readiness with which the arteries of this part undergo dilatation, and partly by the nearness of the heart. In five cases the tumour was referred to a traumatic origin, and Heine is of opinion that these traumatic, cirroid aneurisms had their source in the exuberant formation of new vessels in suppurating contused wounds, the newly formed vessels being exposed to influences favouring the growth of simple nævi. Heine does not follow Virchow in regarding the essential character of cirroid aneurism as consisting in a true excess of growth, consequent on irritation of the walls of the vessels; he considers that the middle coat of the newly formed vessels undergoes fatty degeneration and disappears, and that the walls of the arteries become thinned. Weakening of the resisting power of the middle coat would thus be the primary stage in the development of cirroid aneurism, and the transference of the pressure of the blood to the external coat produces its wasting or atrophy. In regard to treatment, Heine places excision in the first place, especially in the more simple cases; a ligature should first be applied to the common carotid artery, or to the arteries of the head which lead to the tumour. He regards as groundless the objection that excision is dangerous from exposing too extensive a surface of the skull. Of eight cases operated on in this way, all recovered. On the other hand, according to statistics, ligature of the external carotid or of the common carotid, on one side, or even of both carotids, is not of itself sufficient. In thirty-two cases, out of sixty, the external carotid was tied, and in three only with successful result, and that doubtful; and the results of ligature of both carotids, in seven cases, were equally unfortunate. In cases where the disease extends over the greatest part of the face or cranium, Heine recommends, as experimental means, transfixion and the twisted suture, injection of the perchloride of iron, or electro-puncture.—*Bienn. Retrosop. Syd. Soc.*, 1871.

46. *New Incision for Ligature of the Subclavian Artery.*—Assist. Surg. F. P. STAPLES suggests (*Medical Times and Gazette*, July 22, 1871) a method which he has practised for some time, and by which he hopes that the difficulties of ligaturing the subclavian artery in the third stage can be overcome.

His process is as follows: "The patient being placed in the usual position, with his head back and to the opposite side, with his shoulder depressed slightly, but not violently, let the point of the knife be entered at the posterior edge of the sterno-mastoid muscle, one inch and a quarter above the superior margin of the clavicle, and let an incision be carried from that point, in a straight line, to within a quarter of an inch of the attachment of the trapezius to that bone,

dividing skin and platysma. This incision should be a little short of three inches. The operator should then lay aside his knife, ligature the external jugular vein in two places, and divide it in the direction of the original incision. The deep cervical fascia should now be divided, and the edges of the wound gently separated, when the posterior belly of the omo-hyoid muscle will be exposed for its entire length. The edges of the wound should now be retracted, and the superior retractor should carry with it the omo-hyoideus; and when this has been done, the white cords of the plexus, with the artery inferior and internal to them, will be observed to occupy the bottom of the wound. The knife should now be laid aside, unless it is necessary to dissect a lymphatic gland out of the way, and the vessel separated from the lowest cord of the plexus with a director, and ligatured in the usual manner. Tying the external jugular vein is not insisted upon, provided it can be easily drawn aside, but generally a ligature would expedite matters, and any branches of this vein which cross the line of incision should, if divided, be treated in the same manner.

"What are the advantages claimed for the operation recommended? Why have the stereotyped guides to the artery—viz., edge of anterior scalenus, and tubercle on first rib—not been mentioned? What special advantages has the operation described over that commonly practised—i.e., by incision along or near the upper margin of the clavicle?

"The advantages claimed for the operation are—1. That the incision is parallel to the normal course of the artery. 2. That the true guide to the vessel—posterior belly of omo-hyoid—is exposed by incision recommended for its entire length. 3. That the edges of incision admit of easy retraction, and, in this way, of easy access to the vessel. 4. That the risk of venous hemorrhage obscuring the final steps of the operation is lessened.

"My answer to the second question I have asked is very simple. To feel the edge of the scalenus anticus in a bleeding wound is next to, if not quite, an impossibility, and it does not follow that the tubercle on the first rib is always so well developed as to permit of recognition by the sense of touch; and, independently of both these surgical signposts, it has always appeared to me that a far more reliable guide is to be found in the omo-hyoideus.

"Regarding the third question—What special advantages are claimed for this operation over that commonly practised?—it may be stated, I think, that, if an incision is made in a line with the clavicle, it is obvious that, when carried deeper, it will not meet with the omo-hyoideus or true guide unless at its outer angle; whereas the incision recommended is parallel to that muscle throughout its entire length. Secondly, in the wound resulting from the ordinarily used incision, retraction can only be made in an upward direction, as the clavicle prevents retraction downwards; whereas, with the incision now recommended, retraction can be made in both directions. Thirdly, in the incision recommended there is no risk of dividing the transverse cervical vessels; whereas, when the incision along the clavicle is used, they are often cut, and, when it so happens, very troublesome bleeding obscures the further steps of the operation."

47. *Traumatic Aneurism from Gunshot Wound.*—Dr. JOESSEL (*Gaz. Méd. de Strasbourg*, 1871, No 2), as Director of a Military Hospital in Hagenau, had an opportunity of observing the infrequency of traumatic aneurism after gunshot wounds. In a patient with a gunshot wound at the inner side of the left thigh, somewhat near its middle, on the 8th day subsequent to the receipt of the wound, an arterial hemorrhage occurred, which was controlled by ligation of the femoral artery immediately above the course of the ball in the muscles of the thigh; on the next day there was developed at the inner face of the thigh a pulsating tumour, which, notwithstanding the application of direct compression and compression of the artery at the groin, at the end of eight days had acquired the size of a child's head. Its pulsations were evident to the eye, while by auscultation the aneurismal murmur was detected, but which disappeared when compression was made upon the artery above. Dr. J. concluded that the aneurism had been the result of a wounding of the arteria femoris profunda, and that a cure could be effected by ligating the femoral artery behind the origin of the vessels supplying it with blood. The artery was tied close under

Poupart's ligament, and at the end of six weeks the cure was complete.—*Centralblatt f. d. Med. Wissenschaften*, June, 1871, No. 25. D. F. C.

48. *Excision of the Scapula*.—Mr. CHARLES STEELE communicated to the Surgical Section of the British Medical Association the following case of this:—

C. B., aged 8, was admitted on April 14 into the Bristol Royal Infirmary, on account of a large swelling upon the right scapula, which had been forming only six weeks, and had enlarged very rapidly during the last fortnight. The tumour covered the whole surface of the scapula except the inferior angle, and encroached over the upper border towards the clavicle; it was firmly adherent to the scapula, most prominent over the spine, and had a highly elastic and, in parts, fluctuating feeling. The child had fallen off in flesh slightly, and looked rather delicate. Mr. Steele made an exploratory incision, and removed a minute portion of the substance, which on microscopic examination showed large, almost square, cells filled with secondary cells. Extirpation of the scapula was decided upon; and, on the 18th, after making a free incision down to the bone through the tumour, to confirm diagnosis, Mr. Steele made a free elliptical incision from the upper border to the inferior angle, carefully surrounding the first incision, so as to avoid infiltration. He then slipped the inferior angle of the scapula from under the latissimus dorsi, divided the muscles attached to the posterior and anterior borders, freed the subscapularis muscle from its surroundings, divided all connections of the clavicle and humerus close to those bones, and, by very delicate dissection, cleared the projections of the tumour from their close proximity to the subclavian vessels, etc. The supra-scapular, posterior scapular, and subscapular arteries, and one muscular branch, were secured. The forearm was supported across the chest, and a compress of wool applied over the excavated cavity. The tumour had evidently sprung from the bone; it covered its dorsum, infiltrated its tissue, formed a large firm projection on the venter, and had stretched the supraspinatus, infraspinatus, and subscapularis muscles as a capsule inclosing it. Recovery steadily progressed till the seventh week; the wound was then nearly healed, the child ate well, had gained in flesh, was able to be up all day and go into the garden, and looked well. Two nodules of encephaloid now recurred, and were removed entire, the intercostal muscles being cleaned in doing so. Ten days afterwards, a fresh nodule formed near the spine; and the granulating surface of the wound became so infiltrated that all hope of further removal had to be abandoned. It was some satisfaction to notice that all recurrence of disease was in the lower part and towards the spine. Mr. Steele remarked that this case showed clearly two points: first, that the operation was well borne by the system, and recovered from; and, secondly, that even before cicatrization was complete, a surprising amount of movement existed in the arm. The hand and forearm could be freely used, and the arm drawn well forwards, also extended from the side, and even drawn backwards by the latissimus dorsi muscle. This showed that, had the disease not returned, a very useful limb would have resulted.—*British Medical Journal*, August 26, 1871.

49. *Primary Excision of the Elbow-joint*.—C. F. MAUNDER, Surgeon to London Hospital, states (*Lancet*, May 20, 1871) that all surgeons are familiar with the operation of excision in cases of disease of the elbow-joint, but he believes that primary excision of the ends of the bone forming this articulation in cases of compound fracture opening the joint is not familiar to all surgeons as a substitute for amputation. During the ten years he has been on the surgical staff of the London Hospital, he has performed excision at least eight times. "An injury in this region of the upper extremity must," he says, "be very severe indeed to induce me to amputate the limb. The worst condition would probably be that in which a large extent of soft parts had either been carried away or been so damaged as to be beyond repair, and even then I would cut away an equivalent in bone so as to adapt the length of limb to remaining sound structures. Every attempt should be made to save a healthy hand; and it should also be borne in mind that the injury is situated at the upper and not the lower part of the forearm—a very important fact as regards the future

utility of the hand, because an equally severe injury about the wrist would, if the limb were saved, be followed by more or less gluing together of those tendons upon the integrity of which the fingers depend for their utility. In the above-mentioned examples of excision the chief vessels and nerves of the limb have been uninjured, and possibly such would be a necessary condition in excision in the majority of instances, although, perhaps, an exception might now and then arise, the alternative, amputation, being postponed for a few days in order that the absolute necessity for such a severe measure might be established. In the majority of the above cases the injury resulted from a fall upon the elbow, and in this way the more important vessels and nerves escaped unhurt; but the uniformity of the fracture was remarkable—the lower end of the humerus being often broken into two chief fragments by a T-shaped fracture, one arm of the letter passing transversely above the condyles, the other at a right angle through the articular surface. This last was doubtless caused by the sharp edge of the greater sigmoid notch of the ulna. But it should also be borne in mind, and is important, that the bones when exposed by operation were more comminuted than was expected, and consequently, had no operation been performed for the removal of the fragments, severe local and general disturbance would have resulted. I am supported in this suspicion by the fact that occasionally cases have come under my observation in which, although a compound fracture close to the elbow had occurred, yet a communication with the joint was not positively determined. In such an instance the limb has been ‘put up,’ but the resulting local inflammation and general disturbance have been such as now and then to lead to amputation through the arm.

“Notwithstanding the utility of the limb which follows the successful performance of this operation, it cannot be undertaken with the same freedom from risk as in chronic disease of this joint. In the latter case reaction is generally mild, and comparatively little suppuration follows; while, on the contrary, in primary cases, both local and general symptoms are severe for the first few days.

“*Operation.*—This is not easy of performance. The bones entering into the formation of the joint are so irregular in their outline, especially when comminuted, that great care and the expenditure of some time are requisite in order to isolate them, and to separate the firmly attached muscles and ligamentous structures. Consequently, excision for injury is more difficult of execution than excision for disease, in which latter the muscular and ligamentous attachments are more or less wasted and destroyed. The operation is best commenced by a longitudinal incision along the centre of the back of the elbow, extending three fingers’ breadth above and below the point of the olecranon; and, if conveniently situated, the original wound may be utilized to the extent of dividing the integuments only, but no deeper structures. Hitherto, when the H or the E incision has been resorted to, the transverse or the semitransverse cut has severed those very structures—the tendinous prolongation of the triceps to the fascia of the forearm—by which (I have lately demonstrated both upon the living and the dead subject) extension by the triceps muscle may be *always* secured. The integument being thus divided, the triceps muscle just above the olecranon should be cut longitudinally. The inner portion is to be detached from the end of the olecranon, and it, with the ulnar nerve and soft parts along the inner side of the bone ends, are to be separated from the bones. The outer half of the severed muscle is not to be cut transversely, but is to be scrupulously preserved continuous with its tendinous fibres which run forward between the point of the olecranon and the external condyle of the humerus. When this structure, together with muscular fibre, is detached from the subjacent bones, a broad and thick band of tissue will have been preserved, competent hereafter to extension of the forearm. Now the olecranon, if not already broken off, should be removed. Having done this, the joint is exposed, and the abnormal relations of the fragments of bone to each other can be determined, and their several removal effected. Without this the difficulties of the operation would be greatly increased, and a large section of skin be necessary.

“I am acquainted with no operation of equal magnitude, the result of which can be, as a rule, more gratifying both to the patient and the operator. To this end both patient and surgeon require patience and perseverance. The

passive movements necessary to secure a useful limb are often very trying to the sufferer, and painful, in a different sense, in their execution to the surgeon. As soon as the acute inflammatory symptoms, should they arise, have subsided, and suppuration is of small extent, pronation and supination of the hand should be performed on the injured limb by the surgeon with one hand, while with the other he holds firmly the shaft of the ulna. At a later period, where a soft union is judged, after careful manipulation, to be taken place at the elbow, flexion and extension are to be slowly but unflinchingly carried on by the hand of the surgeon, and the patient is to be encouraged in these exercises himself. In this way a most useful limb, retaining the chief movements of the healthy joint, and great strength, may be secured to the patient, as I have lately shown by the exhibition of patients to several medical societies. Of the eight cases alluded to, six occurred in hospital and two in private practice. Of these, two died—one of pyæmia, and the patient in this instance was of a most desponding temperament, having expressed a certainty of death as soon as he met with the accident, and throughout his illness; the other was also the subject of a compound fracture of the skull."

50. *Puncture of the Intestines in Puerperal Peritonitis with Great Tympanites*.—M. DEPAUL communicated to the Surgical Society of Paris, May 3, 1871, the case of a female, æt. 22, who had been delivered April 19, 1871, and who was subsequently attacked with acute general peritonitis, vomiting, considerable tympanites, and extreme anxiety. Her condition was most alarming, and speedy death seemed imminent. On the 26th of April, M. Depaul plunged a trocar in the direction of the transverse colon, from the canula of which a jet of fetid gas escaped and also some fluid having a strong stercoraceous odour. The patient immediately experienced relief. The following day M. Depaul made another puncture above the umbilicus, with the same happy result. At the subsequent meeting of the Society (May 10th) M. Depaul announced that the patient was at that time perfectly cured.—*L'Union Médicale*, July 27 and 29, 1871.

M. FOUSSAGRIVES communicated to the Academy of Medicine a paper in which he recommends puncture of the intestines in cases of severe tympanites. He has collected eighty-four cases in which the operation has been performed, which show that the operation is not particularly dangerous. He quotes also several cases where asphyxia was imminent from the pushing up of the diaphragm.

51. *Injury to the Cervical Vertebra*.—Dr. J. FAYRER records (*Indian Med. Gazette*, June, 1871) an interesting case of this in a girl six and a half years old, who had been suddenly lifted by her head from a bench on which she was sitting on to a table at some feet distant. At the moment she felt sharp pain and heard a snap in her neck, as of a bone going out of place. "There can be no doubt," Dr. F. says, "that in this sudden and violent transport from the bench to the table, raised by the head, some sudden rotatory movement, aided by the weight of the unsupported body, caused dislocation of the articulating process of the sixth from the seventh cervical vertebra, and probably fractured the transverse process near its junction with the body of the bone."

Dr. F. placed her under the influence of chloroform, "made a careful examination, and after continued and careful extension of the neck, with counter-extension from the shoulders, effected a change in the position of the bones, and partially returned them, as nearly as possible, to their normal position. It was not deemed prudent to use any further interference, and the child was placed in the recumbent posture, with instructions to keep her so, and support the head on either side with a pillow stuffed with sand."

In a week this little patient was well and free from pain, but a certain amount of distortion remained.

52. *Hydrate of Chloral in Tetanus*.—MR. C. MACNAMARA states (*The Practitioner*, Sept. 1871) that he has treated since Sept. 1, 1870, ten consecutive cases of tetanus in the Chandni Hospital with the hydrate of chloral alone.

The quantity "administered varied from 40 grains to 160 grains per diem, according to the severity of the symptoms and age of the patient; but after a little experience of the effects of chloral, it seemed to me that it had no specific influence over the tetanic spasms; nevertheless, there can be no doubt that even in the most severe cases of tetanus this drug has the power of sending the patient off into a deep sleep, and thus for the time being of preventing the tetanic spasms; but in several instances it appeared as if the hydrate of chloral, by thus keeping back the tetanic energy, rendered it more concentrated; after deep sleep from chloral the spasms sometimes returning with such terrible violence as speedily to destroy the patient. Of the ten cases treated exclusively with chloral, seven were instances of traumatic tetanus, and only one of these recovered; two cases of idiopathic tetanus were thus treated—one of these recovered, as also did a case of the disease occurring fifteen days after childbirth. My experience thus far has led me therefore to conclude that I was hardly justified in trusting to the chloral alone in the treatment of severe cases of this disease; as an hypnotic it seemed invaluable, but we must, if possible, do something more than put our patients to sleep in the management of bad cases of tetanus; and although Calabar bean possesses an influence infinitely short of being a specific in this disease, nevertheless the extract of physostigma, if judiciously employed, has, I think, a salutary influence over some cases of tetanus."

The conclusions Mr. M. has formed as to the general prognosis are, with reference to the former, that "we should be mainly guided by the temperature of the patient's body; so long (I am referring to the natives of India) as the temperature of the body is below 100° F., I would give a favourable prognosis; and I would treat such a patient by giving as much milk and arrowroot as he could take, with a little wine and soup from time to time, and for an adult, 40 grains of hydrate of chloral at bedtime. If the temperature of the patient's body, however (especially in the morning), rises to 101°, there is danger to be apprehended; should the temperature rise suddenly from 99° or 100° to 102°, the patient is in imminent danger, and I have seen few cases of tetanus recover after the temperature of the body has risen to 103°. In these cases, however, we should resort to the extract of Calabar bean, and hydrate of chloral at bedtime, and we may do so with some hope of success, provided the temperature keeps under 103° and the muscles supplied from the spinal nerves are chiefly implicated; but if the muscles directly under the influence of the medulla are involved, and the temperature of the patient's body reaches 103° and upwards, we should relieve his terrible agony with hydrate of chloral, but can have but faint hopes of his recovery. After death from tetanus, the temperature of the body rises rapidly to about 107° F.

53. *Drainage in Gunshot Wounds.*—Dr. CHRISTOT has recently published, in the *Lyon Médical*, a series of interesting papers on "Drainage in Gunshot Wounds," in which he illustrates by many detailed cases the great utility of this means under very unpromising circumstances. His general conclusions are—1. Drainage constitutes a valuable surgical procedure for warding off the accidents which ensue in gunshot wounds of the soft parts. It furnishes favourable results in those muscular and aponeurotic seton-wounds which are too often complicated by diffuse inflammation and extensive suppuration. By reason of the facilities which it affords for the discharge of pus and all kinds of septic liquors, it constitutes an excellent means of arresting traumatic fever, and of preventing or causing the disappearance of the accidents of septicæmia. Its application seems to be especially necessary in those cases in which the inflammatory action has been induced by the prolonged presence of foreign bodies amidst the tissues, such as projectiles, shreds of clothing, splinters, etc. 2. By the rapid limitation of the extent of the inflammation which drainage puts into force, it acts efficaciously in cases of diffuse suppurative peri-arthritis by protecting the endangered joint. In such cases it should be resorted to as speedily as possible. This, indeed, is one of the most important cases in which it can be employed. 3. In those cases in which gunshot wounds extend more deeply, and in which the bones or joints are implicated, drainage should be employed

with more reserve. It would seem to be insufficient to meet the formidable accidents of traumatic arthritis, and it is scarcely more efficacious in the cases in which the diaphyses of the bones are concerned. It is, perhaps, more hurtful than useful wherever the injury implicates a medullary cavity of the first rank (as in the diaphyses of the femur, humerus, and tibia), for the elastic tube which is so well borne by the soft parts becomes an agent of irritation all the more dangerous, as in the osseous system the phenomena of inflammation or absorption present special conditions which only explain too well the serious general complications that result. Drainage resumes all its efficacy in injuries of the skeleton of the extremities (as in the hands and feet, wrist and instep), whatever may be their extent or multiplicity.—*Med. Times and Gaz.*, Sept. 2, 1870.

54. *M. Guérin's New Method of Dressing Wounds*.—M. GUÉRIN, being struck with the dust and germ theory of disease as advanced by Pasteur and Tyndall, was led to employ a new mode of dressing wounds founded on these doctrines. With this view he applies to wounds a thick covering of cotton so as to prevent by filtration the access to them of the dust and germs floating in the atmosphere. His mode is as follows: In dressing a stump, for example, he wraps it round and round with successive layers of cotton. A liberal use of the substance must be made, and several yards of cotton-wool successively disappear around the limb. It is quite obvious—to speak in the words of the surgeon of St. Louis—that the thick interposition of clothing is requisite to filter the air before it reaches the wound. It is not the less necessary to extend this dressing in all the directions of the limb, as foul or unfiltered air might find its way to the injured part. Thus, in amputation of the thigh, thick layers of cotton-wool are carried up to the hip and around the waist and the nates, so that all the approaches to the wound are carefully guarded in every direction. Coupled with this, M. Guérin exerts a gentle pressure over all the inclosed parts by means of ordinary cotton bands—a point to which he attaches great importance, as it enables him to tighten the whole appliance and to keep the parts snugly together.

This constitutes the entire proceeding. It may be observed that M. Guérin does not use carbolic acid in any way whatever. The wound is simply washed with camphorated alcohol after the operation. The surgeon's hands, the sponges, and instruments undergo no kind of preparation before the operation. The cotton-wool and cotton bands are steeped in no fluid.

M. Guérin lays great stress on the importance of carefully watching this dressing, which, it is interesting to observe, is intended to be a permanent one. He watches the dressing day by day, and never takes it off unless some extraordinary circumstance occurs, but contents himself with adding fresh layers of cotton-wool if he observes that it is in any way disturbed in such a manner as to permit of the introduction of unfiltered air into the wound. Thus the dressing may remain *in situ*, and does so in the great majority of cases, for twenty-five or thirty days. On removing the dressing after this lapse of time a healthy granulating surface is discovered, and half a wineglassful of healthy pus is found within the folds of the cotton. It may here be stated that M. Guérin, on applying a first dressing, stuffs up the stump with cotton-wool, which he introduces beneath the flaps. The process of granulation gradually drives out the cotton, and cicatrization takes place perfectly. Moreover, this mode of dressing may be applied, and has been with great success, to extensively abraded and burnt surfaces.—*Lancet*, Sept. 2, 1871.

55. *Transverse Rupture of the Trachea*.—Dr. LAUENSTEIN relates the case of a soldier who received a kick from a horse on the anterior part of the throat, by which he was thrown upon the ground in a state of stupor. There was a contused wound of the jaw, three-quarters of an inch long and extending to the bone. This wound was secured by suture. The pulse was greatly accelerated, and at every respiration tracheal râles were heard. There was, also, cough, but without bloody sputa. A more careful examination detected the presence of tolerably extensive emphysema of the neck. From these

symptoms, taking into account the accident which gave rise to them, the diagnosis was a transverse rupture of the trachea. Notwithstanding there was an increase of the emphysema, yet, otherwise, a speedy improvement took place in the condition of the patient from the use of cold water and leeches. The only remaining symptom consisted in a dry croup-like cough. The patient is easily put out of breath by any attempt at motion, while pressure made upon a particular portion of the neck is attended with pain. GURLT has found recorded cases in which there was a solution of continuity, from accident, in the walls of the trachea; in five the wound was accompanied with fracture of the thyroid cartilage. In one only of these recorded cases was there a favourable termination, and then only after a resort to tracheotomy.—*Centralblatt f. d. Med. Wissenschaften*, Dec. 17, 1870. D. F. C.

56. *Loose Cartilages in the Knee-Joint removed by Subcutaneous Incision.*—Mr. W. J. SQUARE stated, at the recent meeting of the Surgical Section British Medical Association, that, since he published his account of the operation by subcutaneous incision about ten years ago, when he related nine cases, he had performed the operation fifteen times. The twenty-four cases had all been operated on without selection, and all had recovered without drawback. Cases were brought forward illustrative of the dangers incident to the operations by direct and valvular incision; and the operation practised by the author was described. The loose cartilage is conducted to the inner and lower part of the joint and held there by an assistant. A tenotomy-knife having been introduced, the capsule of the joint is freely incised upon the cartilage; the knife is then directed so as to open the cellular tissue over a convenient part of the fascia. The cartilage is now pressed and lifted out of the joint into the cellular bed prepared for it, and slid along for about three inches. It is fixed *in situ* with a firm pad and adhesive plaster, the foot and leg being bandaged up to the edge of the cartilage, and the limb placed in a splint. If no inflammation ensue, the cartilage is excised about a week after the operation. The paper closed with a few remarks on the different varieties of loose cartilage, their structure and origin.—*British Medical Journal*, August 26, 1871.

57. *Treatment of Burns.*—M. de BRUYNE recommends the following in cases of burns in place of the carron oil and similar applications: fresh hydrate of lime, 3 grammes; glycerine, 150 grammes; chlorinated chlorhydric ether, 3 grammes. The mixture is transparent and uniform, and is applied to the injured part by means of a piece of fine linen, over which may be laid oiled silk or other material to prevent evaporation. M. de Bruyne says that the treatment is equally applicable in cases of burn unattended with sloughing, and in those where sloughing has occurred and the eschars have fallen off. He believes that it will also be found useful in ill-conditioned wounds, and in tonic, callous, fungous, and foul ulcers. The quantity of the anæsthetic or of the lime may be varied according to circumstances.—*British Med. Journal*, August 19, 1871, from *Journal de Bruxelles et Lyon Médical*, July 23.

58. *Catechu and Opium as an Astringent in Gleet.*—Dr. R. LOCKE JOHNSON extols for the cure of gleet an astringent injection composed of: Tinct. opii ʒij; Tinct. catechu ʒss.; Mist. Acaciæ ʒij. M., to be used twice daily. He relates one case in which the discharge ceased after the second application, and did not return.—*Medical Press and Circular*, August 23d, 1871.

59. *On Certain Rapidly Fatal Cases of Urethral Fever following Catheterism.*—Mr. W. MITCHELL BANKS, in an interesting paper on this subject (*Edinburgh Medical Journal*, June, 1871), remarks, "Of the great sensitiveness of the urethra, and of the readiness with which reflex actions are propagated by means of the numerous nerves supplying it and the neighbouring parts, all are aware, and it has, of course, been long recognized that instrumental interference with the urethra sometimes produces a train of unpleasant symptoms, varying in intensity from a mere passing rigor to such an attack as may actually terminate in death. It seems highly probable that this sensitiveness is height-

ened after the accession of puberty. . . . Almost immediately death has been known to follow the simple passing of a catheter, though performed with the utmost care."

The following are Mr. B.'s conclusions :—

"1. That a careful distinction must be made between true urethral fever, and pyæmia resulting from operative interference with the urinary passages.

"2. That urethral fever is due to shock propagated by the sympathetic nervous system; and that if certain recent views as to the etiology of ague be correct, a considerable analogy can be shown to exist between the two diseases.

"3. That urethral fever may assume any degree of intensity, from a slight rigor and subsequent general *malaise* to such serious prostration as may end fatally after some days.

"4. That occasional rare cases occur where the nervous shock is so profound, even after the simple introduction of a bougie or catheter, that death may result within twenty-four hours, and that these cases are comparable to such as are sometimes seen in other fevers, particularly scarlatina and typhus, where the patient sinks almost before time has been given for the distinctive characters of the disease to show themselves.

"5. That renal disease, with its resulting vitiated condition of the blood, probably predisposes to such cases, but that the suppression of urine which occasionally accompanies them, though it must assist in producing, is by no means necessarily the *cause* of death, and does not, as a rule, give rise to symptoms of uræmic poisoning."

60. *Extension of Inflammation from the Epididymis to the Urethra*.—Dr. FURNEAUX JORDAN, in a paper read before the British Medical Association at its recent meeting, remarked that inflammation of the prostatic urethra from any cause (injuries, operations, foreign bodies, urinary obstructions, or adjacent inflammations), may extend to the epididymis. It would be an original discovery to find any variety of prostatic inflammation which might not run by continuity along the submucous connective tissue of the vas deferens. He was not aware that any one had observed the converse of this. He had recently watched a case in which inflammation unmistakably travelled from the epididymis to the urethra. A married man, free from disease and the history of disease, suffered from the effects of a severe blow on the scrotum. On the subsidence of scrotal swelling, the left epididymis was found to be enlarged, painful, and tender. The next day the adjacent portion of the vas deferens was tender, and swollen to the size of a goose's quill to near the inguinal ring. The following day the swelling of the cord extended into the ring. A few days later a slight urethral discharge appeared, and all the symptoms of a mild urethritis. Mr. Jordan believed any new fact to be of value which would help to explain urethral discharges.—*Lancet*, August 19, 1871.

61. *Diaphragmatic Hernia*.—Dr. SCHLETZLER relates, in the 12th number, 1871, of *Bayer. Aerztl. Int. Bl.*, two somewhat singular cases of diaphragmatic hernia, closely resembling each other in their etiology, and in the results of the post-mortem examinations. In both the symptoms of ileus were preceded for some considerable time by a traumatic injury. In both there existed a perforation of the diaphragm, through which had passed a portion of the digestive tube, and become constricted. In the first case, that of a girl, 18 years old, one year after she had received a stab in her right side, at the edge of the ninth rib, on a line with the axilla, she was suddenly seized with diarrhœa and the symptoms of peritonitis, under which the patient quickly sank. A post-mortem examination showed that a loop of the transverse colon, with its portion of mesentery, had passed through the opening in the diaphragm into the right thoracic cavity, where it had formed an adhesion with the under surface of the lung. In the second case, that of a young man, 22 years of age, a stab had been inflicted on the left side, in a line with the mamma and axilla, at the fifth intercostal space. Notwithstanding the wound was succeeded by symptoms of great severity, the patient, who was of a robust and sound constitution, was, in the course of a few days, able to return to his occupation,

that of a worker in wood. After the lapse of six months or more, the patient was suddenly attacked with profuse hæmatemesis, repeated at short intervals, and speedily followed by death. On a post-mortem examination the heart was found pushed entirely over to the right side, and the lung crowded backwards and upwards, and in a state of complete collapse. The left thoracic cavity was in a great measure occupied by what appeared to be a distended sac-like body, of a dark-brown colour. Upon further examination this was found to be the larger portion of the stomach, in a state of fatty degeneration and distended with blood, which had passed through into the cavity of the thorax, and become so incarcerated by an opening in the diaphragm of the size of two finger-breadths, that it could no longer be returned into the abdomen. Its abnormal position was rendered the more firm by an adhesion between portions of the mesentery which had passed into the thorax with it, as in the instance of the incarcerated colon related above. In consequence of the annular strangulation of the stomach by the aperture in the diaphragm, there had taken place hemorrhagic infiltration of its partly softened coats.—*Centralblatt f. d. Med. Wissenschaften*, May, 1871, No. 18. D. F. C.

62. *Record of Cases of Tumours of the Breast admitted into the Edinburgh Royal Infirmary from 1833 to 1869.*—Dr. JOHN CHUENE has collected (*Edinburgh Medical Journal*, July, 1871) the cases of tumours of the breast admitted under Mr. Syme's care during a period of thirty-six years, and classifies them under the following heads: 1. Cystic; 2. Mammary Glandular, or Fibrous; 3. Scirrhus; 4. Encephaloid; 5. Epithelial.

		No. of cases admitted.	No. of operations performed.	Result of operation.	
				Recovered.	Died.
Innocent Tumours,	Cystic . . .	28	26	26	...
	Mammary . .	29	29	29	...
	Glandular, or Fibrous . .				
Malignant Tumours,	Scirrhus . .	187	145	135	10
	Encephaloid .	2	2	2	...
	Epithelial . .	1	...	...	...
Total . . .		247	202	192	10

247 cases—245 females, and 2 males.¹ 202 operations, 10 deaths, nearly 5 per cent.; or, in other words, of every 20 persons operated on, 1 died. The fatal cases occurred after excision of the breast for primary scirrhus. The cause of death was shock in two cases, and in the remainder either erysipelas or inflammatory affections of the thoracic viscera.

1. *Cystic Tumours.*—This class includes simple serous cysts, compound cysts, and fibro-cystic tumours. The simple cysts (11 cases) were punctured, followed by the application of a blister. Of the remaining 17 cases, in 15 the tumour alone was removed, in 2 the breast was excised along with the tumour. Average age on admission, 39 years; average duration of disease before admission, 4 years (shortest duration 2 weeks, longest 13 years); average age when tumour was first observed by the patient, 35 years.

2. *Mammary Glandular, or Fibrous Tumours.*—28 females, 1 male. Average age on admission, 30 years; average duration of disease before admission, 2 years; average age when the tumour was first noticed by the patient, 28 years; average stay in hospital after operation, 18 days. In the majority the

¹ 1. W. D., æt. 50, admitted August 1850. Fibrous tumour. Removed with a successful result.

2. D. G., æt. 51, admitted June, 1867. Scirrhus tumour of right breast. Tumour removed. Patient readmitted in May, 1868, with a similar tumour in right breast. An attack of insanity necessitated patient's removal to Morningside Asylum.

tumour alone was removed, in the remainder the breast was excised along with the tumour.

3. *Malignant Tumours*.—The case of epithelial cancer was too far advanced to admit of operation. In both cases of encephaloid the tumour was removed. Scirrhus cancer, 178 were primary, 9 secondary. Of the *primary* cases, 137 were operated on; in 132 the breast was excised, in 5 it was removed with caustic. In 1857, 2 cases occurred in which an enlarged lymphatic gland was removed with the knife before the application of the caustic; with these exceptions, no case in which the glands were affected was operated on. In 132 cases of excision, 10 deaths as a result of the operation occurred, or $7\frac{1}{2}$ per cent. In 5 cases removed by caustic, 2 were cured, 1 relieved, and 2 dismissed *in statu quo*. A mixture of sulphuric acid and sawdust was employed in 4 cases, chloride of zinc paste in 1 case. The average age on admission was 49 years; the average duration of the disease before the patient applied for relief, 2 years; the average age when the disease was first noted, 47 years; the average stay in hospital after operation, 27 days. I have noted which breast was affected in 64 cases; the left breast was diseased in 33, the right in 30, and both breasts in 1 case.

Secondary scirrhus was removed with the knife in 6, in 1 the disease was removed by caustic, in 2 an operation was deemed inexpedient. In one case the patient remained well after the primary operation for 36 months, in 1 for 24 months, and in 1 for 18, in 1 for 12, in 2 for 4 months, in 1 for 3 months, and in 1 the disease returned before the wound of the primary operation was healed.

63. *Carbolized Catgut Ligature*.—Dr. GEO. BUCHANAN expresses (*The Practitioner*, July, 1871) his conviction that carbolized catgut ligatures produce obliteration of the arteries without ulcerating through the coats, as ordinary ligatures do, and he says, "although this process is of no importance in the case of vessels such as the superficial femoral or brachial, yet undoubtedly it is the cause of the secondary hemorrhage which is so frequently the cause of death after ligature of the larger vessels near the aorta. If then it can be established, by the publication of a sufficiently large number of examples, that ligature of vessels on the antiseptic principle, with carbolized catgut ligatures, is followed by obliteration of the canal without ulceration of their coats, one of the objections to ligature of the great vessels would be removed."

Dr. B. relates a case of traumatic femoral aneurism in which he used the carbolized catgut ligature, and states that "considerable discharge took place, but from first to last not a trace of decomposition or putrefaction could be observed. The most careful examination of the discharge failed to detect any appearance of the catgut ligatures, and I have no doubt in my own mind that they were retained and imbedded in the tissues, and that occlusion of the vessels took place without ulceration of the coats of the artery and discharge of the ligature. The patient made an excellent recovery."

OPHTHALMOLOGY.

64. *Phlyctenular Ophthalmia*.—IWANOFF relates (*Klinische Monatsblätter*) the results of the microscopic examination of three eyes suffering from phlyctenular ophthalmia. He states that the disease consists essentially of the deposition of a collection of lymph-cells between the epithelium and Bowman's membrane, and that these cells not only produce destruction of the epithelium and a superficial ulcer, but that they also burrow by the side of nervous filaments into the true tissue of the cornea. It is to the irritation and compression of the nerves that he attributes the photophobia so often associated with the malady.—*Sydenham Society's Biennial Retrospect* for 1869-70.

65. *Luxation of Crystalline Lens*.—Dr. HÖRNER communicated to the Ophthalmological Society of Heidelberg a case of luxation of the crystalline

¹ Session of 1869. Comptes Rendus.

produced by a blow. The patient had previously lost the other eye from iridocyclitis, following the extraction of a traumatic cataract. He came to Dr. Höring six weeks after the receipt of the second injury. The remaining eye was slightly injected, sensitive to light, and watering freely; the pupil irregular and displaced upwards: and the lens, in its capsule, lying in the anterior chamber, about an eighth part of its circumference, in a downward and outward direction, being still covered by the iris. The lens was somewhat rotated on an oblique axis, so that its upper and inner margin was directed forwards. The acuity of vision was much diminished, the patient only counting fingers at 2', and reading 23 Jaeger at 5', and no glasses assisted him. He was very unwilling to undergo an operation, and Dr. Höring therefore determined to attempt reduction. For this purpose the man was kept on his back in bed until the pupil was very widely dilated with atropia, so as to clear the margin of the lens. Calabar bean was then instilled every two hours, in the hope that the contracting pupil would pass in front of the lens and press it back. The contraction was imperfect, but still the iris came in front of the lens, excepting at the point where its margin projected forwards. The patient was discharged, got drunk, vomited, and returned with his lens once more displaced. The second attempt at reduction was completely successful, a high degree of myosis was maintained for several days, and the patient was discharged able to read 19 Jaeger with the naked eye, and 14 through a glass of $+\frac{1}{8}$. At the same *séance* Dr. E. Meyer communicated the further history of a patient with congenital luxation of both lenses, whose state had been described by Follin six years previously. The lenses were then displaced upwards and inwards, and the patient required strong convex glasses. In the interim the lens of the left eye had become more displaced in the same direction, leaving the greater part of the pupil free, while that of the right eye had fallen back towards its normal position. The result was, that the patient, who was naturally myopic, now required a concave 7 or 8 for the right eye, and a convex $3\frac{1}{4}$ or 4 for the left. The case was interesting, as affording data by which to determine the index of refraction of the crystalline.—*Sydenham Society Biennial Retrospect*, 1869-70.

66. *Influence of the Sympathetic Nerve upon the Eye.*—DR. SIXTIZIN, in a communication made to the *Centralblatt* (No. 11), states that, having studied the effects of ablation of the superior cervical ganglion of the sympathetic nerve upon the eye in a large number of experiments, he has arrived at the following results: 1. Immediately after the ablation of this ganglion, increased vascular injection was constantly observable in the fundus of the eye of the same side. Ophthalmoscopic examination showed that the choroidal vessels had increased in size, that their anastomoses had become much more distinct, and that in general the fundus was of a much deeper red on the operated than upon the sound side. 2. The temperature of the eye of the operated side rose. In the sac of the conjunctiva and beneath the capsule of Tenon the difference in temperature amounted to as much as 0.9° to 2.4° Cent. 3. The cornea of the side operated upon possessed, when compared with the other, a much greater capability of resistance to the action of foreign and neutral substances. If, for instance, a fine spiculum of glass was inserted to an equal depth into each cornea, it always happened that, whilst on the sound side the spiculum excited more or less violent conjunctivitis, pannus, purulent infiltration of the cornea, with subsequent ulceration and ultimate disintegration of the adjoining tissue, or a more or less severe iritis and threatening of panophthalmitis, on the operated side either scarcely any reaction occurred, which was most commonly the case, or at most it was but slight. It was also observable that, as Claude Bernard has shown, the stronger the animal the greater the difference in the temperature, and the sooner after the operation the foreign body is inserted the greater is the resistance exhibited by the sound side. 4. The well-known neuro-paralytic phenomena consequent upon section of the fifth nerve in the skull, immediately in front of the Casserian ganglion, do not occur, if shortly before this operation, or immediately after it, the cervical ganglion is removed. 5. Even when some of these neuro-paralytic phenomena have made their appearance after section of the fifth, ablation of the ganglion will cause them to vanish

in the course of a few (two to four) days. 6. Such disappearance is possible so long as the surface of the cornea remains moist and polished; if these conditions have supervened, separation of the epithelium, haziness of the cornea, as well as injection and swelling of the iris, will no longer disappear. 7. The complete atrophy or destruction of the eye consequent upon section of the fifth may still be staved off if the ganglion be removed during the progress of the changes, the conditions present either remaining in *statu quo* or undergoing more or less improvement. 8. The ulceration of the lips, especially of the lower one, following section of the fifth, as well as the ulceration of the eyelids, completely vanishes after section of the sympathetic. 9. For the improvement taking place under the last four heads it is not requisite for the animals to have any special protection from injury afforded. In Dr. Sinitzin's opinion, the neuro-paralytic phenomena after division of the fifth occur whether the eye of the side operated on is protected from irritation or not. 10. The diminution of temperature observed by various experimenters on the same side after section of the fifth never occurs when ablation of the sympathetic ganglion has been simultaneously performed. Dr. Sinitzin says, that the changes in the circulation appear to be at the bottom of these effects. Ligation of the carotid, or irritation of the depressor nerve of the heart, neutralizes the inhibitory effects of the ablation of the sympathetic ganglion upon the neuro-paralytic phenomena consequent on section of the fifth.—*Lancet*, May 13, 1871.

MIDWIFERY.

67. *Causes and Treatment of Sterility*.—SEANZONI discusses the recent doctrines as to the causes and treatment of sterility, especially Marion Sims' views. He insists that far too exclusive importance is attached to the mechanical hindrances to the meeting of the semen and ova. He says we know little as yet as to the influence of various morbid conditions upon the fertility of the semen and ova. Diseases of the testicle, it is known, sometimes lead to absence of spermatozoa. May not, he asks, the frequent diseases of the ovaries lead to the production of diseased or defective ova? Manifold experience proves that during extreme anæmia conception does not take place. Here is a proof that in the case of the ovaries, as in that of other glands, a bad condition of the blood leads to bad secretions—ova incapable of fructification are produced. This defective knowledge of the pathological changes of the seminal fluid and of the ovum is the most important hindrance to a scientific foundation for the etiology and therapeia of sterility.

Another series of difficulties arises when we consider the indispensable locomotion of the semen and of the ovum. It is only necessary to call to mind the frequent abnormalities of the Fallopian tubes met with in autopsies—such as congenital or acquired shortenings, dislocations, adhesions—which are completely beyond clinical diagnosis. What do we know as to the condition of the muscular movement of the tubes, and as to that of the ciliary processes, or as to the medium in which the semen is received? Seanzoni then puts the case of a typical dysmenorrhœa with narrow os uteri and sterility. The os is split, the dysmenorrhœa is relieved, but the sterility continues. He asks, must it not be admitted that there is here a cause of sterility which lies in other and unknown conditions? (This may be granted, but the relief of the dysmenorrhœa is alone a sufficient reason for the operation; and besides, the narrow os being in all probability *one* cause of the sterility, it is perfectly logical to remove this cause, giving the patient the possible benefit of its being the only cause. Sound clinical reasoning dictates that we should eliminate all the known complications of a morbid state, and not leave them to harass a patient because there may be others beyond which we cannot relieve.—R. B.)

Seanzoni goes on to make various objections to prove that the narrowing of the os uteri is not clearly established as a sufficient or frequent cause of sterility.

Thus, how often do we find difficulty in passing the sound through some part of the cervical canal, and yet conception taking place! He cites a case in which conception ensued with a typical conoid cervix with small os, in which no treatment had been used. He says, that after the most careful examination, he has not once been able to satisfy himself that sterility was solely due to an obstruction to the passage of the semen through the cervical canal.—*British and Foreign Med.-Chir. Review*, July, 1871, from *Scanzoni's Beiträge zur Geburtsh.*, 1870.

68. *Daily Observations on the Change of Position and Presentation of the Fœtus in the latter months of Gestation.*—Dr. HOENING has conducted an extensive series of observations on the change of position of the fœtus during the latter months of pregnancy. His plan was to make daily observations. Amongst his conclusions are: 1. The stability, that is, the non-liability to change, of the head presentations greatly exceeds that of all the other presentations, especially in primiparæ. Breech presentations are more stable in primiparæ than in pluriparæ. Oblique presentations, on the other hand, are more stable in multiparæ. 2. Pelvic contraction is of great influence over the frequency of change; changes of presentation are three times more frequent than in normal pelvis. 3. It was not observed that the age of the mother had any influence. 4. The heavier the fœtus, the less frequent was change. A head presentation frequently changes to a different position, that is, a first becomes a second, and *vice versa*, but change from a head presentation to an oblique or breech presentation is rare.—*British and Foreign Med.-Chir. Rev.*, July, 1871, from *Scanzoni's Beiträge zur Geburtsh.*, 1870.

69. *Rare Form of Post-partum Hemorrhage.*—Dr. BRAXTON HICKS, after quoting the remarks of Dr. Blundell when speaking of the diagnosis of a second fœtus relative to the falling down of the membranes in front of the os uteri, and the consequent retention of blood within the uterus and the protrusion of the bag of membranes, relates three cases in which the membranes, having remained adherent all round the lower portion of the uterus, and a detachment of the edge of the placenta situated on the side having taken place, a quantity of blood was effused, pushed down the inverted membranes through the os into the vagina, and, the uterus meantime filling, a large amount of blood thereby accumulated, sufficient to produce very serious symptoms. The treatment was indicated, and some few remarks made on the expulsion of the placenta.—*British Medical Journal*, August 26, 1871.

70. *Treatment of Certain Cases of Placenta Prævia and Post-partum Hemorrhage.*—Dr. THOS. UNDERHILL read a paper on this subject before the British Medical Association. The author was opposed to the maxim so strictly enforced by most authorities, that in cases of "unavoidable" hemorrhage delivery should not be attempted whilst the patient is in a state of syncope. During that condition the hemorrhage ceases, the patient is in a state of anæsthesia, and the soft parts are relaxed—these being three desiderata for the safe and speedy performance of podalic version. By waiting until the circulation is re-established, and consciousness restored, there will be most probably a recurrence of the hemorrhage, and the patient will have the dread of a formidable operation. Cases were given in support of the practice suggested. In the second part of his paper, Dr. Underhill advocated the view that in cases of post-partum hemorrhage, should syncope supervene, it was more prudent to remain passive for a time than to resort to hasty measures to restore consciousness. He based his argument upon the fact that, during syncope, the circulation being either languid or altogether suspended, coagula would be more likely to form and occlude the patulous orifices of the vessels than when subjected to the artificial impetus.—*Lancet*, August 19, 1871.

71. *Treatment of Hemorrhage arising from the Retention of the Secundines after Abortion.*—Dr. SWAYNE read a paper on this subject before the British Medical Association at its recent meeting. Treating chiefly of abortions in

the third, fourth, and fifth months, he pointed out their dangers from special liability to retention of the secundines, and consequent hemorrhage and septicaemia. Obstetric authorities were divided as to treatment, some favouring an expectant plan, with the use of plugging, ergot, styptics, and disinfectants to obviate hemorrhage and septicaemia, and others advocating manual interference. He remarked that the plug might sometimes cause an accumulation of blood in the uterine cavity, and showed a pad for preventing this, by making pressure on the fundus uteri. He pointed out the risks of intra-uterine injections, when a large amount of fluid is thrown up with too much force. After remarking that the weight of obstetric evidence in the present day is in favour of manual interference, he stated his concurrence in this view; but that he preferred, instead of using the hand for removing the placenta, to employ an ovum forceps, so modified as to act both as a dilator and an extractor.—*Lancet*, August 19, 1871.

72. *A New Kind of Pelvis, capable of both Dilatation and of Narrowing.*—Dr. WINKLER, of Jena, describes a remarkable *pelvis, which can be dilated or contracted under force*. A girl, *æt.* 16½, was sent to him to ascertain her fitness for marriage. When a year old she had suffered a pelvic fracture by being run over. She was well built, could carry heavy weights, climb hills, and work with ordinary facility. The dimensions of the pelvis were about normal. It was made out that the ascending ramus and horizontal ramus of the pubic bones of the right side were completely wanting in bony matter, being replaced by a ligamentous substance. This substituted material could be pressed in or out by the fingers. When the legs were stretched apart it became tense, and on bringing the legs together it became flaccid. It was further ascertained that the right sacro-iliac joint admitted of movement.—*British and Foreign Med.-Chir. Review*, July, 1871, from *Archiv. für Gynäkol.* 1870.

73. *On Ruptures between the Clitoris and Meatus Urinarius during Labour.*—Dr. P. MÜLLER, of Würzburg, relates (*Scanzoni's Beiträge*, 1870) three additional cases of laceration of the anterior edge of the vulva during labour, entailing dangerous hemorrhage. He refers to a former series of three cases, one of which was fatal, published in *Scanzoni's Beiträge* (Band vi.).

CASE 1.—Young primipara; head in first position; forceps easily applied. Immediately after release of the head bleeding set in, and continued after the placenta was removed and uterus well contracted. Müller saw the blood streaming from near the clitoris. He tried in vain to control it by pressure and by sutures, and at last plugged. Then two sutures were applied through the labia majora, to keep the plugs in, which also were driven out by coughing. The bleeding was very profuse.

CASE 2.—Primipara, *æt.* 23; labour spontaneous; perineum very tense, it split to the anus, in spite of support and lateral incisions. The hemorrhage was observed immediately after labour, although the uterus was contracted. This was supposed to come from the wounded perineum, and a bleeding vein was found there and twisted; but active bleeding persisted from a rent directly behind the clitoris, in the depth of which two yawning venous openings were seen. After compression against the symphysis, with perchloride of iron, the two veins with some trouble were seized and tied by two ligatures. The perineum was stitched with four sutures. On the fourth day it was perfectly united. The wound near the clitoris healed more slowly.

CASE 3.—Primipara, *æt.* 28. Presentation second cranial. Strong pains drove the head rapidly through the pelvis. Whilst passing through the outlet the midwife reported that the blood ran in a stream. When seen anaemia was extreme. The uterus was well contracted. A rent was found between clitoris and meatus, from which the blood flowed plentifully. The wound was closed by two stitches, and the bleeding stopped. Death followed in twenty minutes. *Autopsy*.—Structure healthy; uterus firmly contracted; cervix uteri and vagina quite intact; a slight rent in the perineum. At the fore part of the vulva, close to the clitoris and meatus, was the rent. The bottom of the wound was formed of fine webbed tissue. No large vascular openings were found.

In discussing these cases, Müller says he observed in all that there was increase of bleeding when the uterus was compressed by the hand. This is explained by the fact that the blood is squeezed out of the uterine walls into the connected vaginal plexus.—*British and Foreign Med.-Chir. Review*, July, 1871.

74. *Sudden Death after Parturition*.—DR. THOMAS MORE MADDEN read a paper on this subject before the Dublin Obstetrical Society. The author commences by stating that "the causes of this lamentable accident are manifold: some cases appear to have occurred from the shock of difficult labour acting on a delicate constitution; others from the entrance of air into the open uterine sinuses; others from cardiac disease; in other cases, again, no cause whatever was disclosed by pathological investigation for the fatal event. The most frequent cause of sudden death after labour, according to Dr. More Madden, is thrombosis or embolism, or the separation of fibrine from the blood within the circulation. In the puerperal state the blood, as well as during pregnancy, contains a marked excess of fibrine as well as of serum, and a diminished quantity of red corpuscles. Moreover, during the puerperal state the blood is otherwise altered from its normal condition by the admixture of the products of the physiological changes which are then going on in the uterus. Under these circumstances the formation of coagula may be readily favoured by anything that may derange the balance of the circulation; and this exciting cause may, in many of these cases, be found, observed Dr. More Madden, in the vascular excitement of difficult parturition, where a small fibrinous coagulum may be forced from the right ventricle into the pulmonary artery, and this remains until, by successive additions of fibrine, the calibre of the vessel is completely obstructed, and death necessarily and suddenly ensues.

"The cause of death in two of the cases narrated by Dr. More Madden was very peculiar, and, as far as is known, is not mentioned by any other writer.

"Dr. More Madden then proceeded to relate the particulars of five cases of sudden death after labour which had come within his own observation. Four of these occurred in the hospital with which he was connected (the Rotunda), and one occurred in private practice. In one case death was caused by extensive sloughing of the uterus, which was thus completely separated from the vagina; in one it resulted from the entrance of air into the uterine sinuses; in two from fatal syncope; and in one very remarkable case from rupture of a varicocele of the left ovarian vein."—*Dublin Quart. Journal of Med. Science*, Aug. 1871.

[This paper is published in full in the August number of the *American Journal of Obstetrics*.]

75. *Action of Quinia on the Uterus*.—M. MONTEVERDI communicates to the *Nuova Liguria Medica* the results of a series of experiments he has made on this subject. He has invariably employed the sulphate of the alkaloid. He finds that quinia exerts a general tonic influence on all the organs of the body, but especially upon the uterus. In the course of half an hour after it has been administered, short contractions occur in the uterus, unaccompanied by pain; and these gradually become longer and stronger, with distinct intermissions, so as to resemble closely ordinary pains of labour, the effect lasting for about two hours. In order to effect the expulsion of the fœtus and of the placenta, he believes that doses of about four grains will be found the most appropriate. Quinia appears to be preferable to ergot, because it exercises no injurious influence either on the mother or child, because it is very certain in its action, because the contractions it induces are very regular and natural in their character, and because it is free from danger at whatever period of pregnancy it is administered; or in cases of contracted pelvis, incomplete dilatation of the os uteri, and antecedent to the escape of the waters. He finds that it is of service in the metrorrhagia of pregnancy, in amenorrhœa in consequence of a torpid condition of the uterus, and in puerperal fever, as a consequence of its tonic action. He considers quinia to be indicated in all diseases of the digestive organs, and of the urino-genital system dependent upon atony of the various organic constituents. M. Monteverdi gives a caution in regard to the use of

quinia in pregnancy complicated with any disease requiring its administration, lest abortion or premature delivery be induced. In cases where quinia proves too energetic in its action, he recommends opiates to diminish its effect. He considers quinia to be contra-indicated as a general rule in hysteria.—*Lancet*, Sept. 2, 1871.

76. *Sulphate of Iron as a Local Application in Phlegmasia Dolorum*.—Dr. R. W. CRIGTON was led many years ago to employ the sulphate of iron as a local application in phlegmasia dolorum, from the great success reported by Velpeau from its use locally in erysipelas. It had been employed exclusively in that form of phlegmasia dolorum commencing at the calf of the leg and extending upwards to the groin, where the veins are chiefly involved. It had been applied as a lotion (twenty or thirty grains to one ounce of water), as hot as the patient could comfortably bear it, generally by means of spongio-piline. All the cases so treated had made good and rapid recoveries, contrasting favourably with cases formerly treated by leeching and ordinary hot fomentations. Muriated tincture of iron was, at the same time, given in large doses. The same method of treatment was suggested in other cases of phlebitis. The action of these remedies was referred to their power of controlling vascular dilatation, and also to their antiseptic powers.—*British Medical Journal*, August 26, 1871.

77. *Congenital Contraction of the Vagina relieved by Gradual Dilatation by means of Gentian Root*.—Dr. ROBERT LATOUR records (*La Tribune Médicale*, August 13, 1871) two cases of this. The first patient was nearly twenty years of age, and had been married two years; the second was aged twenty-seven years, and had been married seven years. Their husbands had neither of them ever had satisfactory connection with them. Dr. L. introduced into their vaginas a cylinder of root of gentian two millimetres in diameter, and the following day withdrew it, replacing it with another of the size which the first had acquired by imbibition, and this was daily repeated until the vagina was dilated to its normal size. To the cylinders of gentian were attached tapes by which it was attached to the thighs and abdomen to prevent its displacement. Dr. L. directed his patients to preserve entire rest during the treatment. A cure was accomplished in eight days. The first patient became very soon pregnant, and has since given birth to three children without any difficulty. The second patient had not, at the period of the report, yet become pregnant, but coition was effected without any suffering.

78. *Ulcers of the Os Uteri in Chronic Metritis and Bleorrhœa Vaginæ*.—In the thirteenth number for 1871 of the *Oesterreiche Zeitschrift f. practische Heilk*, as quoted in the *Centralblatt f. d. Med. Wissenschaften*, July, 1871, No. 26, Dr. J. POLLAK writes that, according to his observations, ulcerations seated on the posterior lip of the os uteri are always of more frequent occurrence, larger in size, and, when the result of parenchymatous inflammation, of a more obstinate character than when seated on the anterior lip of the os. The cause of this difference Dr. P. attributes to the much longer-continued exposure to the action of the uterine and vaginal excretions to which ulcers on the posterior lip of the os are exposed than are those on the anterior lip. The diminution in the size of these ulcers goes on at first very rapidly, but then for a time they remain stationary, and it is only after a tedious treatment that their obliteration is effected. As in the case of large ulcerations of the lower extremities, the superficial extent of the ulcers is diminished by a drawing together of the surrounding parts, and it is only when the diminution has in this manner attained its maximum that cicatrization commences from the edges of the ulcers. D. F. C.

79. *Treatment of Fibroid Tumours of the Uterus*.—Dr. ALFRED MEADOWS, in a paper read before the Midwifery Section of the British Medical Association, combated the notion that these growths could be in any way diminished in size, still less cured, by any known therapeutical agent. Discussing the question

from a histological point of view, he felt convinced that it was impossible to procure the absorption of any part of the solid constituents of these tumours; at the same time, he showed that there was ample scope for the exercise of skill in the medical treatment of such cases, especially in regard to hemorrhage and pain. The chief object of the paper was to advocate more frequent resort to surgical treatment. The author expressed his belief that much more might be done in many of these cases than had been hitherto. Even in the subperitoneal variety, he thought that, in cases where much distress existed, abdominal section ought to be resorted to more frequently: while in the interstitial and submucous forms, it ought to be the rule in practice always to endeavour to assist Nature in her method of cure, viz., by expulsion. For this purpose, three objects should be kept steadily in view. 1. All obstruction should be removed by freely dividing the cervix in several directions. 2. The tumour should be separated from its attachments, not necessarily all at once, but by successive stages. 3. As far as possible, continuous uterine action should be maintained by the administration of ergot and other oxytocic agents. A case was cited in illustration of the value of this combined method of treatment. —*British Medical Journal*, August 26, 1871.

80. *Post-Partum Dietetic Treatment*.—Dr. CAIRNS, in a paper read before the Obstetrical Society of Edinburgh, stated that the *common sense* and *correct* treatment in point of diet was, that “every parturient woman requires a dietetic regimen suited to her particular state and condition.” That is to say, no absolute rule can be laid down applicable in all circumstances to all women without exception. For example, a woman after her confinement may not only have no desire for food, but a positive loathing of it, and to force her to take it in such circumstances would only be productive of harm instead of benefit, inducing in all probability acidity of the stomach, flatulence, and diarrhoea. Again, some women have very marked idiosyncrasies in reference to certain articles of diet. Some cannot eat an egg, others cannot eat beef, others mutton, etc., without producing very serious symptoms. While, therefore, I acknowledge that it were rash in the extreme to lay down any one invariable and fixed rule as to what kinds of food should be administered in puerperal cases, I humbly venture to allege,—1st, *That the diet should be nutritious in point of quality.*

2d. *The diet should be small in quantity and frequently repeated.* During labour the digestive and assimilative powers are weakened, as well as other parts of the system, and to exhibit large quantities of food in these circumstances would be to entail upon the stomach a much greater amount of work than it is able to accomplish. That organ fulfils its duties better perhaps than any other organ in the human system, and just because it seems to know that, if it fail in the discharge of its functions, every department of the great and mysterious laboratory contained in the human frame will be thrown into confusion and disorder. But, for the very reason now mentioned, the organ alluded to should be treated with especial leniency and kindness. * * * * *

Administer more than it can easily digest, and it will tax itself to the utmost to digest what remains in excess, when, after finding its efforts abortive, it either ejects the undigested articles by the mouth, or expels them by the gut, or allows them to remain and undergo fermentation—all of which is most unfair treatment to the stomach, and consequently highly prejudicial to the patient. I say, therefore, let food be administered in small quantities at a time, and at such intervals as shall have insured the complete digestion of the previous diet.

3d. *The diet should be varied in kind and form.* Monotony is death, variety life, to the human soul. Even in health the richest viands, when continued from day to day, become unpalatable and even nauseous. A change of diet, in short, is indispensable to a proper relish for food and the maintenance of the appetite. And if so in a normal condition of health, how much more on a bed of sickness. In puerperal cases, therefore, common sense seems to suggest that, with the view of stimulating the appetite and imparting to the patient a positive relish for food, every advantage should be taken of the culinary art in dressing the same article in different forms, and when these have been exhausted, that one article should be substituted for another during the whole period of the patient's convalescence.—*Edinburgh Medical Journal*, Aug. 1871.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Application of Iodine for Arresting the Spread of Hospital Gangrene.
By JON. G. MILLER, M.D., of Pleasant Hill, Missouri.

I consider iodine to be one of the best, if not the very best, remedy for hospital gangrene, and this belief is founded on the following experience: After the battle of Atlanta, Ga., in July, 1864, I had charge of the 17th army corps field-hospital, in which there were over one thousand wounded. The railroad being often destroyed in our rear, we were frequently for quite a number of days without the proper nourishment for the wounded. The consequence was, we had a great many cases of hospital gangrene. It was impossible to procure bromine, and we substituted for it iodine. The following is the manner in which we used it: We took the ordinary compound tincture of iodine, and put into it as much iodine as it would dissolve, and applied it freely two or three times a day, with satisfactory results in every case.

Posture as an Important Adjunct in the Treatment of Diarrhœa and Dysentery. By E. P. SALE, M.D., of Aberdeen, Mississippi.

Rest, as is well known, is the *sine quâ non* in treatment of inflammations, and in order to secure it in the above intestinal diseases, I have for some time past directed patients to assume a *prone position*, with a compress, *e. g.* a pillow or bolster, placed under the abdomen, the amount of compression to be governed by the degree of tenderness. I conceive this method to approach in effect to splints, used to retain fixture of limbs. The compress to a great extent prevents peristaltic action of the intestines, especially when used in connection with opiates. The position renders respiration more thoracic, thereby preventing movement of the intestines, which is consequent on abdominal respiration, and tormina in a great degree is relieved.

[The importance of rest in diarrhœa and dysentery can hardly be too strongly insisted upon. Merely turning in bed, or even the slightest change of position, often brings on an irresistible desire to evacuate the bowels. Whether or not the prone position be as comfortable a one to patients as lying on the side or back, we are unable to judge from actual experience; but we strongly suspect that by some the first-named position would not be well tolerated. The object aimed at by our respected correspondent can be equally accomplished by the flannel bandage recommended by Dr. Henry Dewar, and the patient at the same time have a choice of position. (*Observations on Diarrhœa and Dysentery, as those Diseases appeared in the British Army during the Campaign in Egypt, in 1801.* London, 1803.) We have employed this means frequently during the past fifty years, and with the most satisfactory results. Dr. Dewar ascribes its efficacy to its "confining a certain degree of heat over that part of the body which is the seat of the disease." We do not doubt that it acts usefully

in that way, for the impression of cold on the abdomen is very apt to excite a desire to go to stool; but we conceive that its main utility is its giving support to and keeping at rest the intestines, or, to use the words of the late Prof. Meigs, "putting the bowels in splints," as it were.—ED.]

Death from Chloroform. Can it be Prevented by the Previous Administration of Alcoholic Stimulants? By S. HIRAM PLUMB, M.D., of Red Creek, New York.

The frequent notices of death from inhalation of chloroform are worthy of serious consideration. Having been during the late war one of the operating staff of the 2d Division, 2d Corps, from the battle of Fredericksburg, December, 1862, till the close of the war, my experience in the use of that agent has of course been considerable, and I never have seen a death from that cause. In my earlier experience with it in the field I saw some cases in which it was not borne well, and which required considerable effort by artificial respiration and stimulants to prevent death; and then I adopted the practice of giving stimulants in all cases a few minutes before the administration of the chloroform, since when I have had little trouble with it, the system being under the full influence of the remedy at the precise time when danger would show itself if at all. To that rule I still adhere; many other surgeons I know adopted the same rule. It would be highly instructive could it be ascertained whether in cases of death, stimulants, as brandy or whiskey, had been given before administering the chloroform, that we may know whether stimulants do, or do not, afford either absolute or relative safety in the use of so important a preventive of suffering.

Monstrosity. By WILLIAM T. TAYLOR, M.D., of Philadelphia.

February 1, 1871, G. K., æt. 21, was delivered, after a tedious labour, of her first-born child. It was hydrocephalic; although the head was not very large, yet the fontanelles were wide, and the sutures greatly separated. It had a hare-lip on the right side, with a large cleft of the upper maxillary bone, extending completely through the arch of the palate, and no uvula.

The right eye was perfect, but the left one was quite small and sunk in the socket, with the lids closed; the eyeball had no pupil, but presented a cloudy blue appearance. There were no nasal bones, cartilage, nor any external opening for a nose, but in its place a depression extending from the forehead, between the eyes to the mouth.

The body: the upper and lower extremities were perfect, but the penis was deformed, having only a small prepuce, with no appearance of a glans or corpus cavernosum, although it possessed a urethra through which it urinated freely. Upon giving it some water, I found it could not swallow, and every attempt would cause strangulation, so that we were obliged to desist; nor could it suckle.

On February 3d, the skin around the mouth, and the cheeks became discoloured, resembling ecchymosis. The scalp became quite small and tense; the temperature of the body decreased, and it became very cold; the muscles were stiff and rigid. It lay in a partial stupor, occasionally moving its arms and legs convulsively, until February 8, when it expired; having taken no food nor drink since its birth. Thus it retained its vitality for one week without any nourishment.

DOMESTIC SUMMARY.

Physiological Action and Therapeutic Use of Chloral.—Dr. J. B. ANDREWS, Assistant Physician New York State Lunatic Asylum, in a highly instructive article (*American Journal of Insanity*, July, 1871), gives the results of his experience as to the physiological action and therapeutical use of chloral. He has instituted experiments to determine differentially the effect of chloral in health and disease, and taken frequent pulse-tracings.

From these experiments he concludes, in regard to the physiological action of chloral:—

"1. That the effect of chloral is to reduce the number of pulsations.

"2. That the primary action is to increase the force of the heart's action and arterial tension.

"3. That in large doses, within safe limits, the pulsations are not reduced in number proportionately to the size of the dose; but the effect is more prolonged.

"4. That the secondary effect is to diminish the force of the heart's action and the arterial tension."

"Chloral has been used largely in the Asylum," Dr. Andrews states, "since February, 1870. The whole amount used is 90 pounds, which has been prescribed in 370 cases, as follows:—

Form.	M.	W.	Total.
Mania	69	119	188
Melancholia	30	59	89
Dementia	18	50	68
Paresis	12	1	13
Epilepsy	2	2	4
Employés	3	5	8
	<hr/> 134	<hr/> 236	<hr/> 370

"The average length of time of administration has been to the men 39 days, to the women 43 days. In a case of melancholia marked by the most distressing delusions and wakefulness, it was given in 20 grain doses, for 257 nights, as a hypnotic, without losing its effect, and with the happy result of securing refreshing sleep. The patient recovered. In this case, as in others, the value of the remedy was tested by occasionally intermitting the dose. Sixty grains were administered during an attack of mania for 195 nights in succession."

"In cases of insanity of either an acute or chronic character," he says, "the great value of the remedy is as a hypnotic. In the result when used for this purpose, we are rarely disappointed. Patients who would otherwise be out of bed and noisy at night, to their own injury and the disturbance of a ward, are usually quieted and kept in bed, and at last put to sleep by a dose of chloral timely administered. The great advantage to be derived from a remedy of this character can nowhere be more fully appreciated than in an institution for the insane. It is also administered during the day in smaller doses to act upon the motor nervous system, and as an ordinary nervous sedative."

The advantages of chloral Dr. Andrews sums up as follows:—

"It is a hypnotic which seldom fails to produce sleep, which usually lasts from four to eight hours.

"The sleep is natural, and one from which the patient can be easily aroused.

"It is more generally tolerated by the stomach than other sedatives.

"It does not constipate the bowels or disturb the secretions.

"It does not injuriously affect the appetite.

"It rarely produces headache, or leaves unpleasant effects.

"It does not lose its power by repetition, but the dose may often be reduced after the patient has become accustomed to its use, and seldom demands to be increased.

"When the necessity for its use has ceased, it often, for the first time, becomes disagreeable to the patient.

"Thus far we have met with no case where its administration has induced the habit of its use, which is one of the dangers of opium, cannabis Indica, &c.

"It allays muscular spasm and rigidity.

"No ill effects have been experienced from its use in cases of disease of the brain.

"We have observed no ill effects from its use in the reduction of the pulse or of the temperature.

"In cases of the opium habit, it has proved a valuable remedy to secure quiet and sleep, and allay nervous irritation until the system has rallied from the depressing influence of the former drug. In insanity, it is particularly useful to quiet restlessness and muscular activity. The strength of the patient is thus preserved, and time is gained for building up the general health by tonics and nutritious diet.

"*Its ill effects* we have observed are:—

"In some instances, it has induced nausea and vomiting.

"Unless largely diluted, it produces a burning sensation in the fauces and stomach.

"In many cases its influence is very rapid, the person falling asleep at once, which sometimes gives alarm to those unused to it."

Toxical Effects of Chloral.—Prof. N. R. SMITH, of Baltimore, states (*Boston Medical and Surgical Journal*, July 20, 1871) that four cases of a peculiar affection of the fingers, resulting from the use of chloral, have come under his observation. This affection consists of erysipelatous inflammation of the integuments of the fingers, with desquamation of the cuticle and ulceration around the border of the nails.

He further states that three deaths have come to his knowledge from toxæmia caused by chloroform. The details of these cases seem to us too indefinite to fully establish the conclusions of the eminent author of this communication.

Hyposulphite of Soda in Variola.—Dr. W. A. CORWIN, Assistant Surgeon U.S.N., states (*Medical Record*, Aug. 15, 1871) that small-pox occurred in December, 1870, on board the U.S. Steamer Benicia, in the harbour of Yokohama, Japan, and gradually spread until sixteen of the ship's company, including two wardroom officers, were on the sick list. The cases were of more than average severity, four proving fatal. A roomy house was secured on shore and the cases transferred to it as fast as they declared themselves.

"On the occurrence of the third case," Dr. Corwin says, it occurred to him "to try the effects of bisulphite of soda," but as this could not be obtained, he employed the hyposulphite in drachm doses, and had every reason to be gratified with the result. This treatment, used in the premonitory fever *only*, was commenced with the *fourth* case, and its effects carefully watched. They were those of an *alterative*; mild *hypnotic*, and *laxative*; its administration being in most cases followed by a subsidence of the fever, a tardy or incomplete development of the eruption, and relaxation of the bowels, with watery stools. Upon the full development of the eruption the remedy was generally discontinued, and a supporting *régime* adopted, egg and brandy mixture, with easily digested food. The good effects of the salt were generally manifest after the first dose; the patient losing the heat and dryness of the skin, expressing himself as much more comfortable, and passing a good night. In two or three of the cases the eruption was delayed from twelve to twenty-four hours after the usual time for its appearance, and in one patient the eruption consisted of irregular erythematous patches with successive crops of minute vesicles in the flexures of the limbs. The average duration of the first three cases (fatal) was six days. Of the cases that recovered one was *malignant*, the rest of all degrees of severity. Their average duration was *twenty days*.

"What I particularly wish to have noted is the fact, that in direct proportion to the early and free use of the remedy, really harmless for evil while so potent for good, was the disease ameliorated and its average duration shortened, and this in an epidemic of more than usual severity.

"It may be objected that the cases enumerated are too few to establish the

value of the remedy. This is more than is claimed for the results given. My only object is to add a trifle to the evidence constantly accumulating in the columns of the various medical journals as to the value of sulphur and its lower combinations with oxygen in the treatment of the zymoses, and to elicit, if possible, from the profession at large the results of wider observation and experience."

Decoction of White Oak Bark as a Cure for the Poisonous Effects of Rhus Toxicodendron.—Dr. J. B. A. Risk, of Morgan, Kentucky, states (*Cincinnati Medical Repertory*, July, 1871) that in his experience in the treatment of this erysipelatoid affection of the skin and subjacent tissue induced by any one of the family of the rhus, whether the radicares, toxicodendron, vermix, etc., nothing has been so satisfactory in its curative effects as the decoctio quercu alba; indeed he regards it as a specific; for if the parts diseased are bathed in the warm decoction sufficiently, the soothing effects, the speedy subsidence of the pain and tumefaction and redness soon follow, announcing to the sufferer the sanative influence of this agent. The subsidence of the inflammation and the corrugation of the skin will not perhaps always take place at the first bathing, but, if followed up a few times, will be sure to occur, ending in a permanent cure, without the use of constitutional remedies. In order to effect these results, the parts diseased should be in contact with the decoction, either by immersion or by application with a sponge for the space of thirty or forty minutes, or even longer, when there is much inflammation, and repeated every four hours.

Radical Cure of Fistula in Ano.—Dr. Edw. C. Huse, of Rockford, Illinois, recommends (*Medical Record*, March 15, 1871) the saturated ethereal tincture of iodine for this purpose. Its advantages over the official or alcoholic tincture, he says, is obvious. It is not only *stronger*, and thereby excites inflammatory adhesion in the walls of the tube, but the ether evaporates almost momentarily, and a pure coating of iodine is left along the fistulous track, which doubtless encourages absorption.

The instrument I have used is an ordinary hypodermic syringe, with small silver canula, which may be readily bent to correspond with the direction of the sinus.

The mode of operation is as follows: After exploring the fistula with a *very small* probe (the ordinary probe of the pocket-case is far too large), after determining its course and extent, the patient is to be placed in a good light, and a glass rectal speculum introduced, with its fenestrum opposite the internal orifice of the fistula. The canula is now bent to the required curvature and introduced, when the syringe, filled with tepid water, is screwed on, and the surface thoroughly cleansed of all extraneous matter. This step is not only essential, but serves to allay timidity, or dread of the subsequent operation.

Next, by pressure, the fistula in its whole extent should be dried out, and the iodine will thus come in direct contact with its walls. Introduce now into the speculum a quantity of carded cotton. This will absorb any of the iodine which might otherwise be injected *through* and injure the mucous membrane, and by its characteristic stain will serve to show the completeness both of the fistula and of the operation.

The canula may now be re-inserted and the injection made. It should be done *slowly*, and at the same time the canula gradually withdrawn. Every part of the surface will thereby be reached.

The operation, which is not very painful, should be premised with a cathartic and followed with a full anodyne as ordinarily with the time-honoured knife method. The patient need not be confined to his bed, or room, even for an hour.

Thus far Dr. H. has performed this operation four times, and, as remarked above, with immediate and complete success. The patients were, all but one, below thirty years old. One was tuberculous, but no appreciable injury accrued from thus checking what we were once told is in phthisis a conservative drain. In his first case, a clerk, at 23, there was a dense and almost cartilaginous

state of the fistulous wall, and the injection had to be repeated; but in the others one "sitting" alone was called for.

Treatment of Syphilis.—Dr. F. J. BUMSTEAD, in an interesting article (*American Practitioner*, Sept. 1871), offers some interesting hints on this subject.

"Cases of syphilis may be divided into two classes—the mild and the severe. In the former the symptoms are often of the most insignificant character; the primary sore is superficial and heals in a few days or weeks, leaving but slight induration behind it, and the glands in the groins are only moderately enlarged and hard. Unless the patient is carefully watched from time to time, the macule of an early secondary syphilide upon the chest and abdomen will pass unnoticed. Rheumatoid neuralgia and a few mucous patches in the mouth may pass for the results of a cold and a disordered stomach. In these cases, and in others approximating to them in mildness, it makes but little difference what remedies are employed. If the patient be of a good constitution, and leads a regular life, he is subject to the recurrence of some of these slight manifestations for a few times, when the disease finally disappears, and his physician has the credit of a cure which is really due to the powers of nature.

"Another class of cases presents symptoms of a much more noticeable and severe form, and unless properly met threatens the integrity of important and even vital organs. This severity may be manifest from the first outbreak of secondary symptoms, or only appear in the tertiary period, when the previous secondary symptoms have been mild: for it is a fact not too well known that the degree of severity of the secondary manifestations of syphilis is no test of what the tertiary will be in case these should appear. I have repeatedly known patients to pass through the secondary stage with safety and with little inconvenience, only to break out at some subsequent time with tertiary symptoms of the most alarming character. Now in this second class of cases it does make a difference, and a great difference, what remedies are used, and in what manner. Let us inquire what is the course of treatment commonly in vogue, and examine how far this treatment will account for the obstinacy of the cases referred to at the commencement of this paper.

"The remedies chiefly employed in the treatment of syphilis are only two in number—mercury in some form, and the iodide of potassium. As is well known, each of these remedies is more particularly adapted to one stage of the disease than another; and yet how common it is in practice to see physicians using them without the slightest discrimination! A patient contracts a well-marked chancre, or develops secondary symptoms, and is put upon the iodide of potassium, which can have no possible effect in removing the symptoms of this stage. Ricord and Grassi's analyses of the blood have indeed shown that iodide of potassium has a decided influence over the chloro-anæmia of the secondary period, and may therefore be used as a tonic at this time, especially in connection with iron; but it certainly has no direct effect upon the syphilitic symptoms themselves. In the later stages of syphilis we find the same want of discrimination still more prevalent; and we see practitioners, put to their trumps in obstinate cases, blindly employing mercury for a few weeks, then resorting to the iodide, and repeating this routine an indefinite number of times, for months or years, without any clear idea as to which remedy is indicated.

"A second serious mistake, which is very generally committed, is, as I believe, the selection of corrosive sublimate, in preference to all other preparations of mercury, in the treatment of syphilis; and, I would add, the persistent employment of any form of mercury by the mouth, when the system rebels against it, to the entire neglect of its external use, which has been proved to possess so many advantages.

"Can any one explain how or why the corrosive chloride has acquired such a reputation in the treatment of syphilis as it has with the mass of the profession? In syphilis we have a blood-poisoning which we wish to reach by some agent active enough to control it, and which will find its way into the circulation with the least irritation to the intestinal canal, and the least consequent impairment of the digestive function and depression of the vital power; yet of the forms of mercury among which we look for such a remedy we select, forsooth,

the very preparation which is notoriously the least likely to affect the general system, and which is known to be the most irritant of all, and this too in the most stubborn cases of the disease! Moreover, we continue this agent, always by the mouth, until the intestinal canal rebels against its further administration, and throws it off in frequent stools, while the little that is absorbed is about as powerless over syphilis as so much water would be.

"The only reason that I can imagine for this preference for the corrosive chloride is the slight danger of salivation; yet surely salivation can with rare exceptions be avoided by a little care, even when employing the stronger preparations of mercury; and I myself have used the very strongest preparations in a practice of many years without meeting with this accident half a dozen times.

"My own experience with mercury in the treatment of venereal diseases leads me to conclusions which may be briefly stated as follows:—

"1. Avoid mercury in all cases of chancre, also in all doubtful cases of venereal sores following exposure, unless the failure of other remedies and the danger of destruction of important parts leave no other resource. Such cases are extremely rare. Experience shows that even in well-marked cases of true chancre it is better to defer the administration of mercury until secondary symptoms appear. We are, however, justified in its use in case the chancre, contrary to custom, assumes a phagedenic form; in case the patient's relations, as in matrimony, demand that the sore should be speedily healed; or in case that he himself is unwilling to submit to delay.

"2. Although a true chancre will heal and secondary symptoms will disappear spontaneously, especially when favoured by attention to hygienic rules, yet mercury is the only known agent which has a *direct* action upon them. In tertiary syphilis the iodide of potassium alone has a remarkable effect in dissipating the symptoms for a time, but the concurrent use of mercury is of great value in preventing their return.

"3. When using mercury for syphilis, use it, as the French say, *coup sur coup*—"blow on blow." In other words, give it actively and for short periods, repeated if necessary, rather than in small and long-continued doses. Harm is less likely to result from the former than the latter course, and another advantage is that you have the means of testing the correctness of the course you are pursuing. If the disease has progressed in spite of the first thorough trial, you are probably wrong in your indications; if it has yielded but not disappeared under the first *hit*, you can hit it again!

"4. When a patient for the first time comes under treatment for syphilis, mercury is usually well borne, and does its work well, given by the mouth. It may therefore be administered in this way, and the greater inconvenience of its external use be avoided. During the first mercurial course that a syphilitic patient undergoes the remedy commonly acts more effectively and speedily upon the symptoms than in subsequent courses. In the first course also there is greater danger of salivation; so that a patient who at this time has had his gums made tender by the administration of mercury for a few days may in a second or third course be brought under the influence of this agent with great difficulty. Hence greater caution is requisite in the early treatment of syphilis; and since the physiological influence of mercury often rapidly follows the therapeutical, it is well to suspend the treatment or diminish the dose as soon as a decided effect upon the symptoms is apparent. In old cases of syphilis, especially when mercury has already been used repeatedly or for a long period, its internal administration is found to have less effect upon the disease; and although the danger of salivation is slight, yet other ill effects of the mineral—such as irritation of the intestinal canal, loss of appetite, diarrhoea, and general cachexia—are more likely to ensue. Hence its external use is now to be preferred to its internal.

"5. For reasons already given, the corrosive chloride is the least desirable of all the preparations of mercury for internal administration. I usually employ in my own practice either the *pil. hydrargyri* or the protiodide, or sometimes the *hydrargyrum cum creta*. The protiodide is found to be too irritating to the bowels of some patients, and in all cases should be given half an hour or an

hour after meals, and not on an empty stomach. The mercury with chalk acts mildly, but effectually, when well prepared, and is conveniently combined with quinia and put up in capsules. I most frequently, however, employ the blue mass, made into pills of two or three grains each, with the addition of one grain of the dried sulphate of iron; one pill to be given, three or four times a day, an hour after eating. These pills rarely act upon the bowels or require the addition of opium."

Of the three modes for the external use of mercury, Dr. B. prefers inunction. Dr. B. calls especial attention to the dose of iodide of potassium requisite to give this agent its full effect. "Relief will be had and important organs will be saved," he says, "by giving one hundred grains a day, when the disease only laughs (metaphorically speaking) at fifteen or twenty! Patients find this out themselves when you have not stinted them in the use of the remedy; and will tell you, as one of my patients with syphilitic necrosis of the ulna recently did me, that forty grains three times a day had no effect, while fifty three times a day were at once followed by a manifest improvement. The iodide of potassium has been given with impunity in the quantity of two or three ounces in the twenty-four hours for several weeks and even months, but this amount is unnecessarily large. I have never had occasion to exceed three drachms a day; and from a drachm and a half to two drachms is usually sufficient."

He is convinced, however, "by no small experience that the iodide of potassium cannot be relied upon alone for permanent relief in pure cases of tertiary syphilis; and that the judicious use of mercury, especially by inunction, concurrently with the iodide, affords a much greater degree of security. The 'mixed treatment,' administered in the form of large doses of iodide of potassium internally and repeated courses of mercurial inunction externally, has relieved more desperate cases of syphilis than any other mode of practice that I know of. The books tell us that mercury and iodide of potassium should not be used at the same time for fear of severe salivation, through the evolution of the biniodide of mercury in the system. Experience, better than books, teaches us that this fear is groundless."

Sugar Formation in the Liver.—It is well established that the liver in healthy animals, when examined within a few minutes after death, contains an appreciable amount of glucose; that this glucose increases in quantity in the liver-tissue after the circulation has ceased; that it will even reappear in the liver, separated from the body, after having been entirely washed out by a continued watery injection of the hepatic vessels; and that it is produced by a catalytic transformation of the amyloid substance, or glycogene, under the influence of an animal ferment.

Doubts, however, have been raised whether glucose really exists in the liver during life, and consequently whether there is really a glycogenic function, properly speaking. To clear up these doubts, Prof. J. C. DALTON instituted a number of ingeniously devised experiments, from the results of which he draws the following conclusions:—

"1. Sugar exists in the liver at the earliest period at which it is possible to examine the organ after its separation from the body of the living animal.

"2. The average quantity of sugar existing in the liver at this time is at least two and a half parts per thousand.

"3. The liver-sugar thus found does not belong to the arterial blood with which the organ is supplied, but is a normal ingredient of the hepatic tissue."—*New York Medical Journal*, July, 1871.

One of the Causes of Death from Chloroform.—Dr. ANDREW H. SMITH calls attention (*New York Medical Journal*, July, 1871) to *direct local anæsthesia of the lungs* as a mode of death from chloroform, differing from cardiac syncope, and from paralysis of the respiratory muscles. It is well known that the movements of respiration, although to some extent under the influence of the will, are chiefly reflex in their character. "Now," he observes, "every reflex movement requires as its antecedent an impression upon a sensitive nerve. In this case the impression is chiefly upon the pulmonary nerves, and results from an

excess of carbonic acid and a deficiency of oxygen in the blood. That the origin of the movements is peripheral and not central is shown by the fact that section of the pneumogastrics greatly reduces the frequency of the respiration, which would not be the case if the unærated blood acted directly upon the respiratory centres as strychnia does upon the cord."

In a certain proportion of cases Dr. S. believes "that chloroform destroys life by its local anæsthetic effect upon the lung, rendering it insensible to the presence of carbonic acid, and thus removing the stimulus to respiration. The vapour of chloroform is a decided local anæsthetic, especially when applied to a mucous surface. It is well known that the senses of taste and smell are abolished at a very early stage of chloroform narcosis, and this effect is universally attributed to the local action of the chloroform. Dr. Squibb calls attention to this local anæsthetic effect upon the larynx as explaining the fact that the glottis does not close to prevent the passage of anæsthetic vapours as it does in the case of other irritating substances. Precisely this effect, extended to a large portion of the lung, may act, as I conceive, to prevent entirely the impression upon the nerves which is required to excite respiratory movements. * * * It is to be borne in mind that the lungs partake of the general anæsthetic effect of the chloroform to an exceptional extent, as the blood with which they are supplied is charged more highly with the anæsthetic than the blood in other portions of the body. Now, the experiments of M. Caze, of Strasbourg, show that anæsthetics act rather upon the peripheral nerves than upon the nerve-centres. He states that a limb can be protected against the influence of chloroform inhalation by merely compressing the main artery that supplies it. Immediately on removing the pressure and restoring the circulation, the limb becomes insensible.¹ If this be true, the lungs are evidently exposed to a disproportionate action, since their nerves are bathed by blood containing a much larger proportion of the anæsthetic than is contained in the general circulation. If now we add to this the effect which chloroform vapour exerts upon the nerves by its direct local action independently of the circulation, the surprise is that the perfect insensibility is not the rule rather than the exception. * * * Death from pulmonary anæsthesia would be more likely to result from a large amount of vapour being inhaled at a single inspiration. This may readily occur when the chloroform is poured upon a towel folded in a number of thicknesses, and already warmed by the breath of the patient and by contact with the face. If the towel is formed into a cone, the cone may well be filled with almost pure chloroform vapour. When this is suddenly applied to the face of the patient, the first inspiration must include an undue proportion of the anæsthetic. Hence, an inhaler like that of Dr. Sayre, in which the chloroform is vaporized by the current of air drawn through it, would afford much greater safety."

Calculi under the Prepuce.—A curious case of this is recorded (*Pacific Medical and Surgical Journal*, September, 1871) by Dr. H. W. NELSON. The subject of it was a Chinaman, æt. about thirty-five, who, when a boy, fell from a height and alighted astride some hard body, cutting and lacerating the end of the prepuce extensively, as shown by the cicatrix. The wound healed, "leaving an opening for the urine to pass, surrounded by dense tissue on the upper surface and close to the corona of the gland. The opening was so small that it was with difficulty that I could introduce the point of the smallest silver probe. The foreskin was elongated to the extent of about four inches, and seemed quite thick. Underneath and throughout the whole length, the frenum was large and thickened, measuring nearly three-fourths of an inch in diameter. He told me that when he urinated, the skin would distend like a bladder to the size of a man's fist, which caused great suffering. He would endeavour to urinate slowly, in order to relieve him of the pain. The stream of urine through the opening in the foreskin was probably the size of a common pin, and ejected perpendicularly. When the bladder was emptied, there remained nearly a gill of urine in the sac, which gradually dribbled away, but not to empty it."

¹ Stillé, *Therapeutics and Materia Medica*, vol. ii. p. 111.

Having placed the patient under chloroform, Dr. N. proceeded to remove the prepuce. With that object he made an incision on the anterior surface extending from the end to the corona of the gland, laying the latter bare, when he discovered thirty-eight calculi, varying in size from a No. 6 to a buckshot. He then cut away the prepuce with a straight bistoury, commencing at the upper point of first incision; carried the knife downward, cutting through the fraenum; and then upward, on the opposite side, to the point of commencement. Then, with a pair of scissors, he removed a strip of the mucous lining, so that the edges could be easily drawn together. Eight or nine fine sutures were then passed through. The after-treatment consisted merely of water-dressing, with loose bandage. In two or three days the parts swelled greatly, and became painful, so as to require the removal of some of the sutures where tension was the greatest. About the eighth day, the swelling subsided, and the cut edges commenced to cicatrize, and in a little over two weeks the parts were perfectly healed.

The urethra was very large, and would admit of the introduction of the end of my little finger.

Sudden Death after Parturition; Heart-Clot.—Dr. THOS. F. COCK relates (*Medical Record*, Aug. 1, 1871) an interesting case of this. The subject of it was a primipara, æt. 36, who had enjoyed good health during her pregnancy, being free from most of the discomforts attending that condition, and was actively engaged in household duties. She was free from œdema, headache, nausea, or dyspnoea.

On the 26th of March she had some hemorrhage, not the result of exertion, and so slight as to have ceased before my arrival. No examination was made.

On the 3d of May I was summoned early in the morning on account of hemorrhage, which had taken place soon after rising. I saw the vessel containing the blood, and also the cloths; the whole quantity was less than a quart, and no effect on the pulse was noticeable.

Supposing that the placenta was presenting, an examination was now made. The os uteri was undilated, and no evidence of the presentation could be ascertained, only the fetal head was obscurely felt through a thick cervix uteri. The hemorrhage was trifling, but it was deemed advisable to insert an alum plug, which was suffered to remain for twenty-four hours. There was no flow after this, except dark-coloured serum. I stayed all night, expecting labour to come on; but there was no dilatation of the os uteri when the alum was removed in the morning (May 4th). About 12 midnight, under the influence of moderate pains, the os uteri was found in size about half a dollar; no placental edge could be felt, nor was there any hemorrhage. About 5 A.M. (May 5th) the os had fully dilated, and I ruptured the membranes. After rather prolonged, but not very severe expulsive efforts, the fœtus was born still, at a little after 7 A.M. The cord was pulseless, and the umbilical vein had a black streak; it did not bear tension, but tore off at the placental attachment when put on stretch. There was no hemorrhage, but the pulse had risen somewhat in frequency. The patient now asked for brandy, which was given. On making the examination for the placenta, it was found entirely in utero; and, pursuing it still farther, was found adherent throughout.

I noticed the patient did not complain as much as usual on the introduction of the hand, nor in fact during all the manipulation necessary for detaching the placenta. By persevering, but not prolonged efforts, the placenta was peeled off and withdrawn. The uterus did not act energetically, but *there was no hemorrhage*. Ergot was now given to insure contraction, and manual compression was continued; but the uterus did not respond to these efforts. The pulse became more frequent and more feeble, and the patient more inanimate, without jactitation. Brandy was given as freely as she could take it, but without response in the pulse.

Fearing there might be internal hemorrhage, I reintroduced my hand into the uterus, and found about two ounces of clot. A bit of the placenta about an inch square was removed.

The patient continued sinking; the face was not anæmic, but rather flushed.

and the lips purple; there was no jactitation, no marked dyspnoea; the intelligence was clear. The pulse faded gradually, the extremities became cold, and the patient expired about two and a half hours after delivery.

Neither anæsthetics nor instruments were used during the labour.

The only real abnormal result of the autopsy was a heart-clot in the right ventricle, which extended from the apex through the tricuspid valves, and into the ramifications of the pulmonary artery as far as the second division. Its thickest part was near the apex, where it was lightest in colour. Above it became more attenuated in size, but darker in color as far as it was followed.

New Ovariectomy Clamp.—Dr. B. F. DAWSON calls attention (*American Journal of Obstetrics*, August, 1871) to an ovariectomy clamp of entirely new action which he has recently had constructed, the mechanism of which is extremely simple, and which he claims to have advantages over any one hitherto employed.

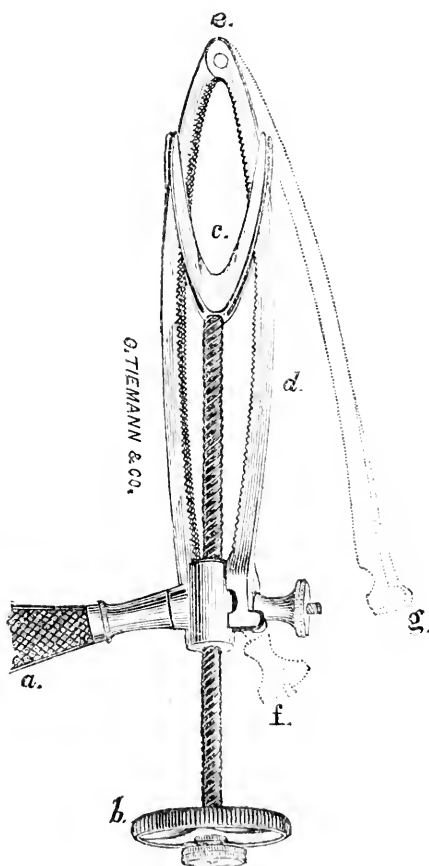
"The principal features of this clamp are: 1. It compresses the pedicle in a uniform manner and into as small a compass as may be needed; 2. The compressing force is exerted by a single screw; 3. Its application around a pedicle is quick and exceedingly simple; 4. With it a ligature can be passed directly around the compressed portion of the pedicle, and be made more secure than with other instruments; 5. Ecrasement could be performed if it were desirable.

"In the accompanying wood-cut, the clamp is seen locked, and in the act of compressing a pedicle, if we imagine the wheel (b) to be turning. By the turning of this wheel the slide (c) is slowly pushed up towards the joint (e), and thus the tissues are constricted to any requisite degree in an elliptical manner.

"In applying the clamp, the arm (d) is to be opened by unscrewing the nut (f), and then passed around the pedicle and closed again, and made fast as before, the slide (c) having previously been screwed back towards the handle.

"If it should be determined to ligate the pedicle, the clamp is to be armed, beforehand, with the ligature, by passing it between the lower blades of the slide and the arms of the instrument, which is then applied; by this means the ligature is enabled to engage the pedicle as tightly as may be desired, and without any strain being brought upon it until the clamp is removed.

"If the clamp is to be used instead of the ligature, after sufficient compression of the pedicle, the handle (a) and the wheel (b) are to be removed by unscrewing them, which renders the clamps much lighter and perfectly flat, so that no inconvenience is caused by its resting on the abdomen.



"The dotted outlines (*g*) in the cut show the arm of the clamp opened ready for application, and needs no particular explanation.

"Besides the purpose for which this clamp was originally designed, it may advantageously be used in the removal of hæmorrhoids, portions of the tongue, penis, scrotum, and extraneous growths.

"The entire instrument is so light, compact, and small, that its case may be carried in the vest-pocket without inconvenience. It is manufactured by G. Tiemann & Co., 67 Chatham Street, New York."

Impaction as a Cause of Vesico-Vaginal Fistulae.—Dr. S. C. BUSEY, of Washington, D. C., with a view of determining, if possible, the most frequent causes of vesico-vaginal fistulae, has analyzed (*American Journal of Obstetrics*, Aug. 1871) the cases of Dr. Emmet, as reported in his recent work.

"The lesson taught by this analysis," says Dr. B., "is that impaction is the usual cause, and that delay in resorting to artificial means to expedite delivery, after it has occurred, incurs not only danger to the mother, but imperils the life of the child. Of these 65 cases, 50 children were certainly lost. Though instruments were employed in very many of the cases, it is perfectly apparent that the error was in not having resorted to artificial means sooner."

Dr. Emmet says, "After a careful review of all the recorded cases admitted to the Woman's Hospital since its foundation (twelve years), he could not satisfy himself that more than three cases out of the whole number should be regarded as having resulted from instrumental delivery."

Another fact, says Dr. B., is established by his analysis,—the infrequency of pessaries as a cause.

Vaginismus.—In an interesting article on this affection (*American Practitioner*, Aug., 1871), Prof. T. PARVIX states that undoubtedly the majority of cases of vaginismus can be cured without resorting to the knife. The removal of the cause is frequently sufficient in recent cases. The application of local sedatives may answer in others. Still others may be cured by dilatation, either *gradual*, as with glass bongsies or gum-elastic bags distended with air or water, or *abrupt*, as performed in a manner similar to that originally proposed by Récamier for spasmodic contraction of the sphincter ani.

Compound Syrup of Assafoetida.—Mr. J. J. RAMBO, of New York, calls attention (*American Journal of Pharmacy*, September, 1871) to a formula for this preparation, which, he says, he has been for a number of years in the habit of preparing, to obviate the great objection felt by most patients to the disagreeable smell and taste of assafoetida, and which has prevented to a great extent the more general use of this valuable drug. "The formula I find to answer the purpose effectually, at the same time its medicinal qualities are enhanced by composition with syrup of wild cherry, possessing the valuable therapeutic properties of both. *R. Infusi pruni Virginianæ Oj; Assafoetidæ ʒj; Sacch. albi ʒxxiv; Magnes. carb. ʒij.* Rub the assafoetida and magnesia with the infusion gradually added, so as to make a uniform mixture and filter: to this, transferred to a bottle, add the sugar and agitate occasionally until it is dissolved. As a result we have a handsome syrup which does not differ in appearance from the syrup of wild cherry.

"The property possessed by the volatile oils of bitter almonds, cherry laurel leaves, bark of wild cherry, &c., containing hydrocyanic acid, of removing the odor of assafoetida has long been known, and advantage taken of this property by M. Maheir, a French pharmacist, to remove the odour from mortars and bottles with which it came in contact; but I am unaware that the fact has ever been applied to its administration as a medicinal agent."

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RICHARD M. HODGES,

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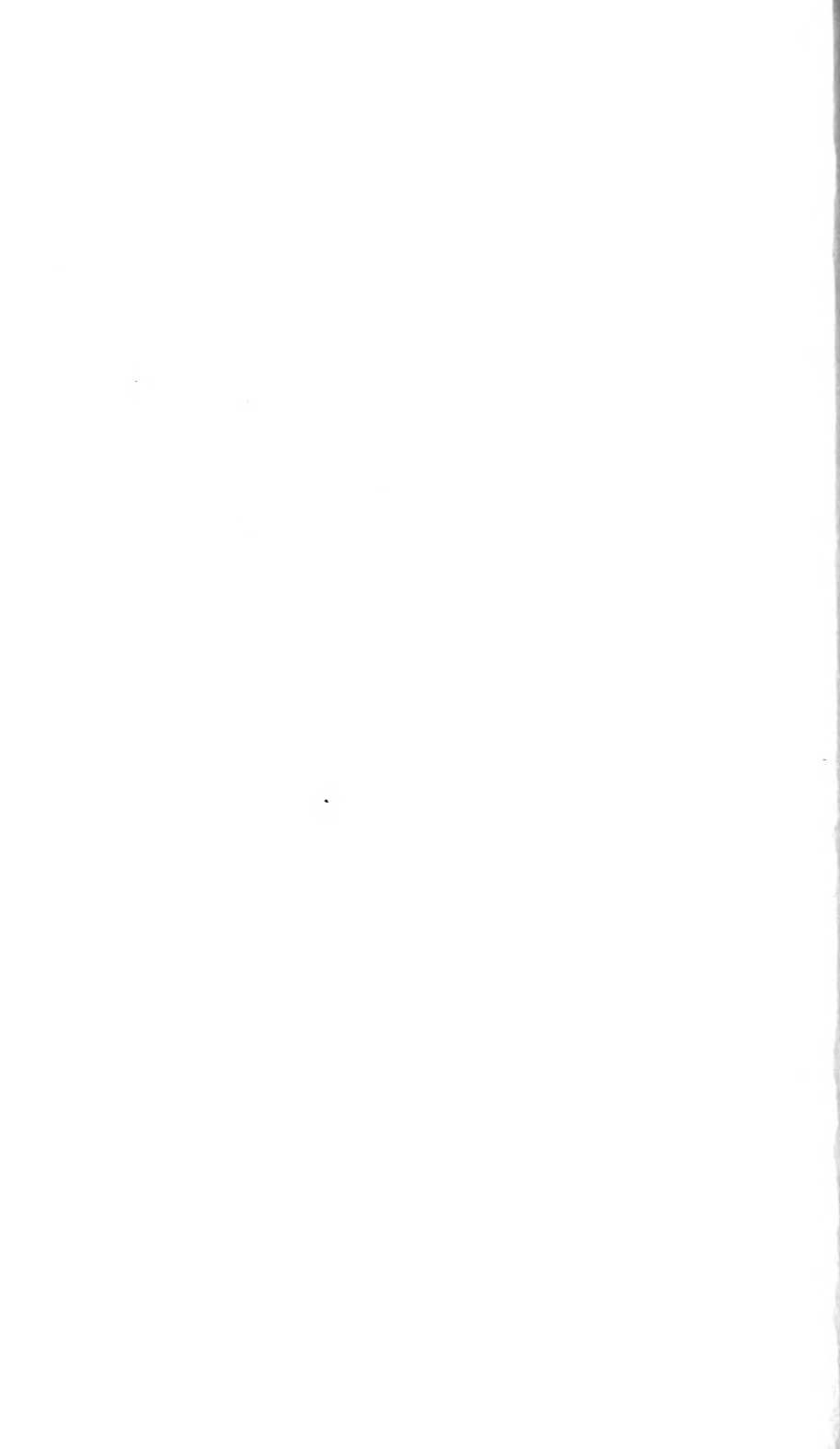
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